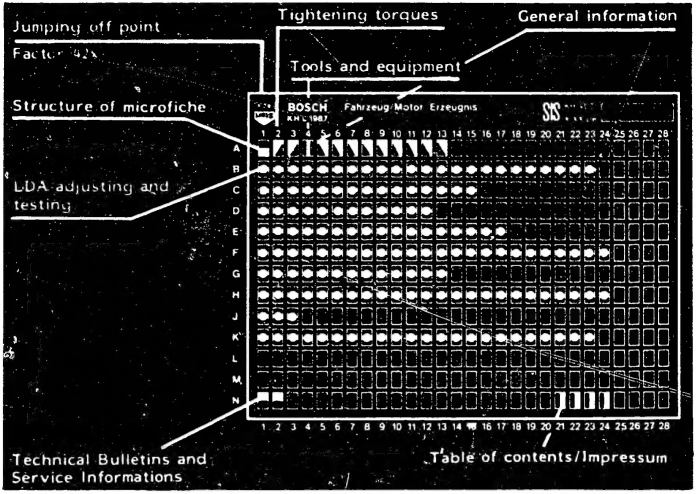
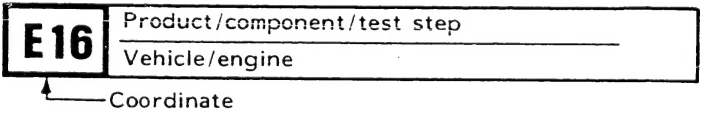
Structure of microfiche

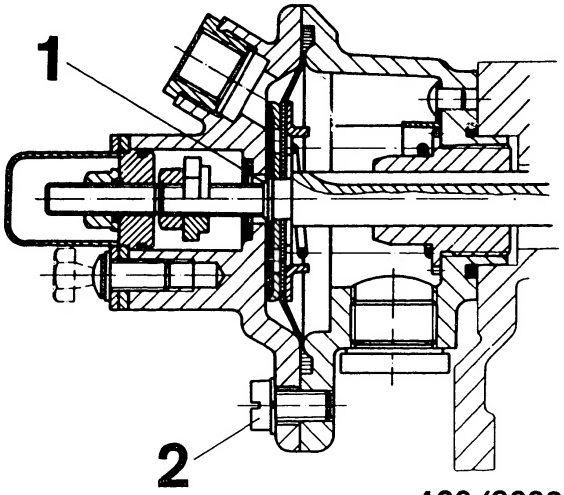


1. Read from left to right
2. Title of microfiche (appears on each coordinate)



3. Limits of section

4. Purely vehicle-specific passages in the text are marked with a vertical bar.

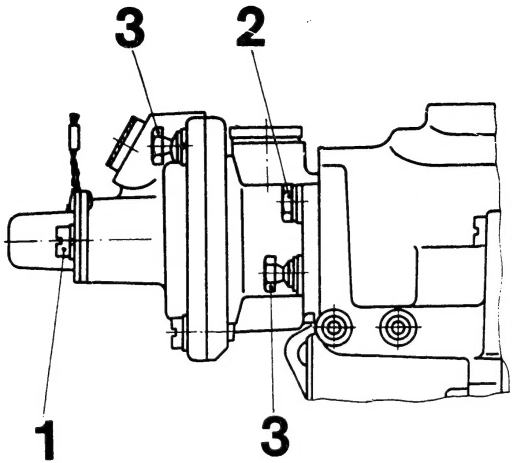


420/0033

1. TIGHTENING TORQUES

1.1 At assembly

Item 1	Slotted round nut	3.5...4.0 Nm
Item 2	Fillister head screw	5.0...7.0 Nm



420/0034

1.2 Tightening torques after conclusion of testing

Item 1	Fillister head screw	5 ... 7 Nm
Item 2	Hex screw	5 ... 7 Nm
Item 3	Breakaway screw (screw head is broken off after final test).	

2. TOOLS AND EQUIPMENT

Assembly device	KDEP 1544
Assembly plate	KDEP 1628
Socket-wrench set	KDEP 1047
Socket-wrench set	KDEP 1578
Socket wrench set	KDEP 1048
Calibration mechanism	KDEP 1629
Socket wrench	KDEP 1546
Socket wrench	KDEP 1620
Box wrench	KDEP 1547
Pressure regulator for compressed air with pressure gauge 0...4 bar	Commercially available
Adjusting throttle	1 688 130 132
Pressure gauge 0...1.6 bar; quality grade 1.0; Scale graduation 0.05 (e.g. Wika Type 211.160. 1.6, Part No. 4184, from Wittig, Stuttgart).	Commercially available

3. GENERAL INSTRUCTIONS

For Repair

The horizontally mounted standard manifold-pressure compensators are available with 2 different hole patterns in the mounting flange. Which side of the assembly tool KDEP 1544 is used depends on the hole pattern in the standard manifold-pressure compensator to be repaired.

The position of the slot in the lifting rod of the manifold-pressure compensator must align exactly with the position of the mounting flange. For that reason, it is absolutely necessary to use assembly tool KDEP 1544 for the assembly of the horizontally mounted standard manifold-pressure compensator.

The spring clip for securing the guide nut is riveted into the manifold-pressure compensator housing and for that reason cannot be replaced with a new spring.

The hex heads of the breakaway screws for fastening the manifold-pressure compensator cover and the protective cap are broken off not after completion of assembly of the manifold-pressure compensator, but only after it has been adjusted on the fuel-injection pump test bench.

On cleaning the parts

Wash out the parts in a non-combustible commercially-available cleaning agent.

Then blow them out with compressed air.

Follow the following safety regulations:

Regulations for Work with Combustible Fluids (Vbf) from the Federal Ministry of Labor (BmA).

Safety Regulations for Handling of Chlorinated Hydrocarbons, for the plant: ZH 1/222
for the employee: ZH 1/119
from the Hauptverband der Gewerblichen Berufsgenossenschaften (Zentralverband für Unfallschutz und Arbeitsmedizin), Langwartweg 3, 5300 Bonn 5 (Central Association for Accident Prevention and Industrial Medicine).

In other countries, follow the corresponding regulations from the country in question.

On adjusting and testing

These instructions describe the adjusting and/or testing of the manifold-pressure compensators attached horizontally to RQV governors, and the adjustment of the brackets used with them for internal torque-control and adjustable blocking of start.

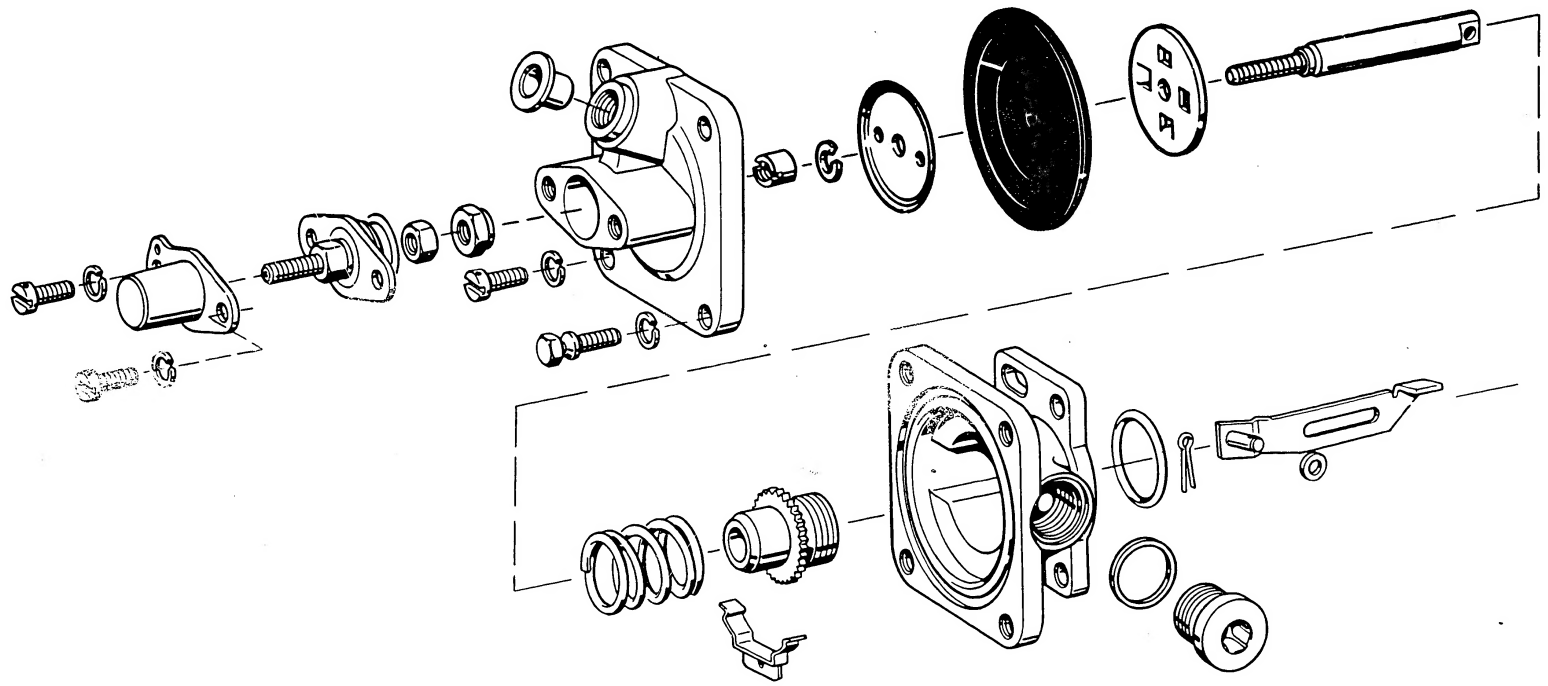
The horizontally attached manifold-pressure compensator (LDA) is available in five different versions:

- LDA with intermediate housing
- LDA without intermediate housing (intermediate version)
- LDA without intermediate housing (uniform LDA)
- LDA without intermediate housing (application by Mack Co.)
- Two-stage LDA

These instructions describe the adjustment of the models named as example and shown in the illustrations: proceed analogously for governors of similar design.

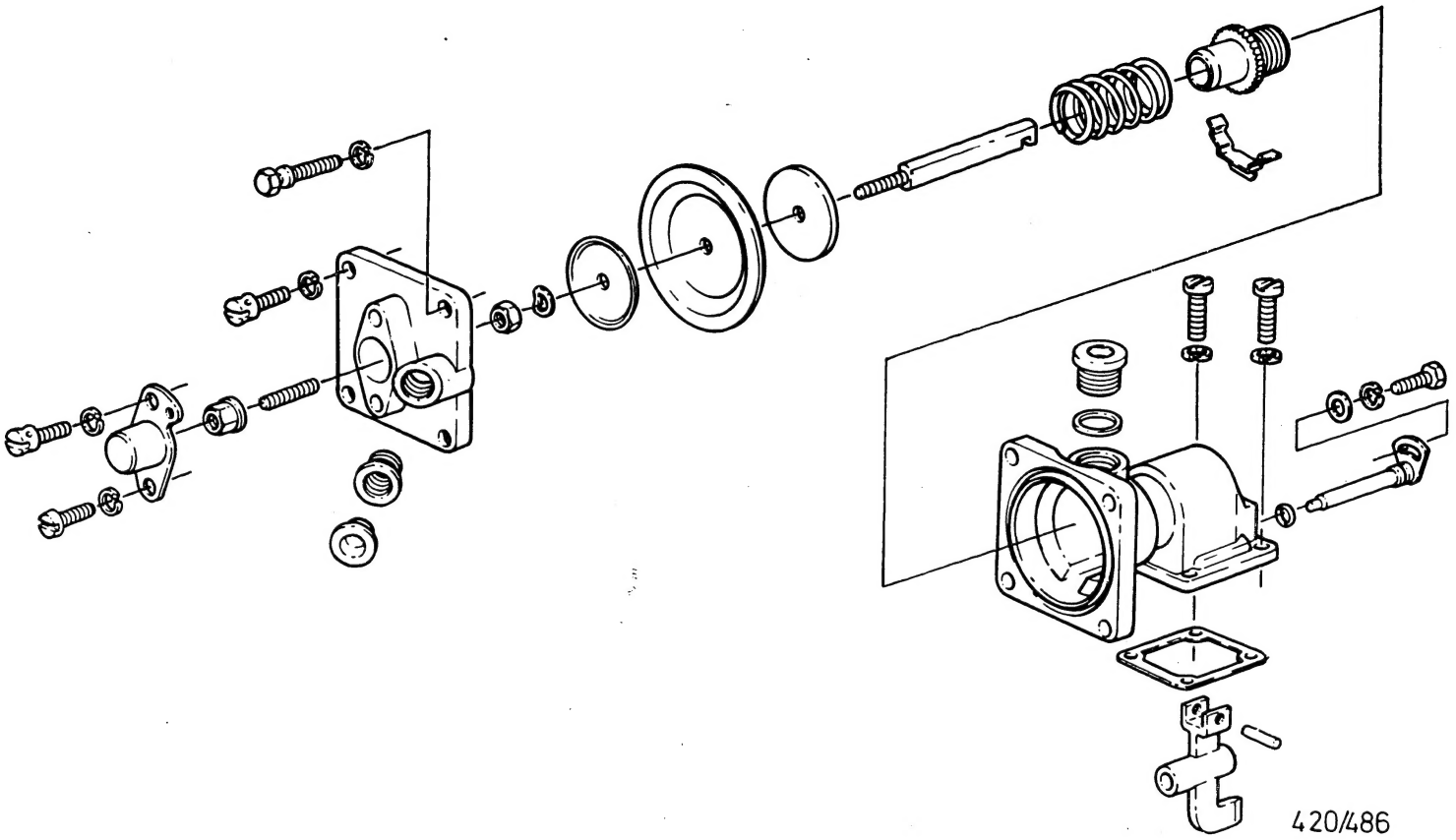
After completing adjustment of the manifold-pressure compensator and/or the governor, break off the hex heads of the breakaway screws for fastening the manifold-pressure compensator cover and the closure cap by turning them further.

A shift is gradually being made from bar to mbar for indicating the charge-air pressures described for testing. Watch that in the test specifications.

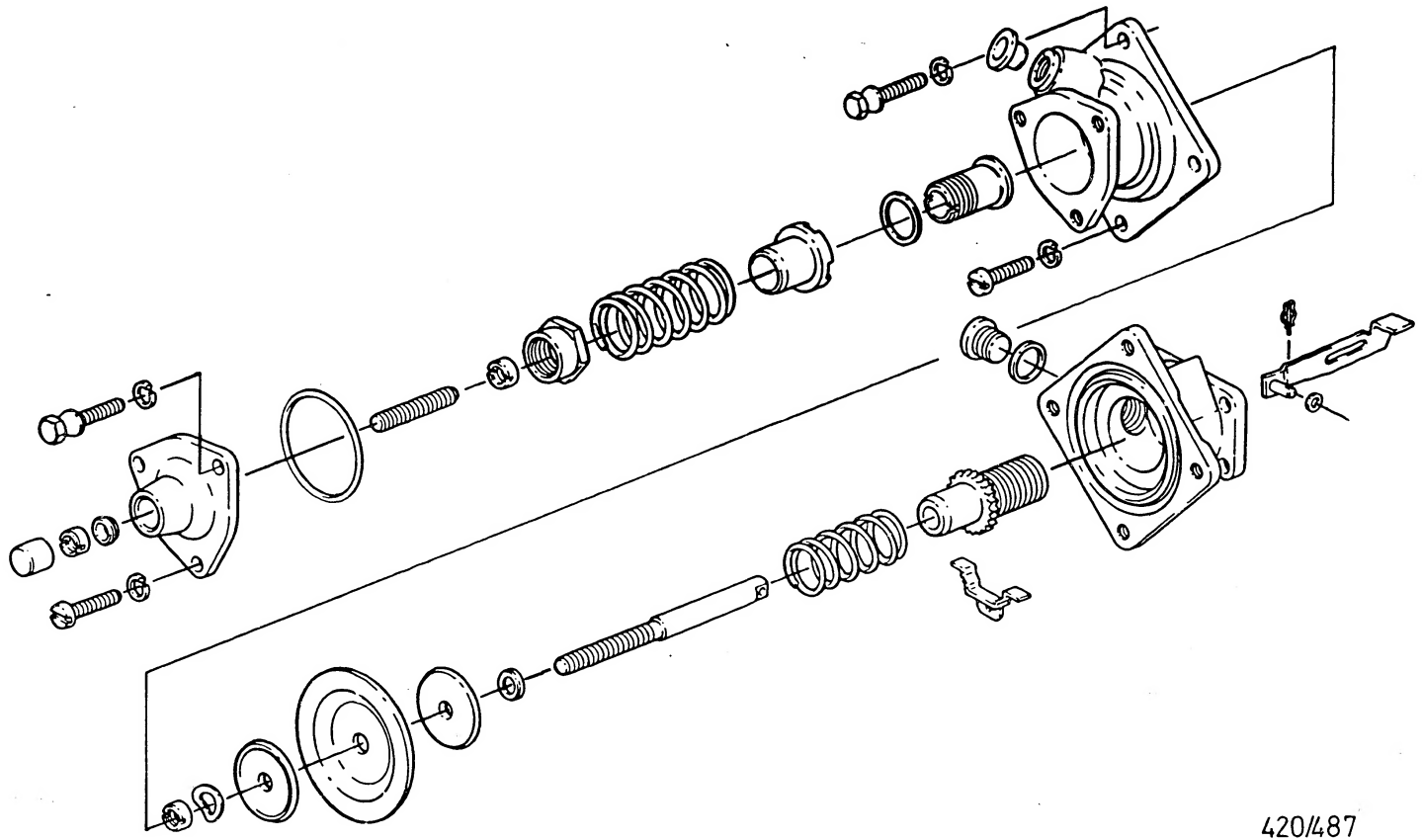


420/0035

4. HORIZONTALLY MOUNTED STANDARD MANIFOLD-PRESSURE COMPENSATOR (exploded drawing)

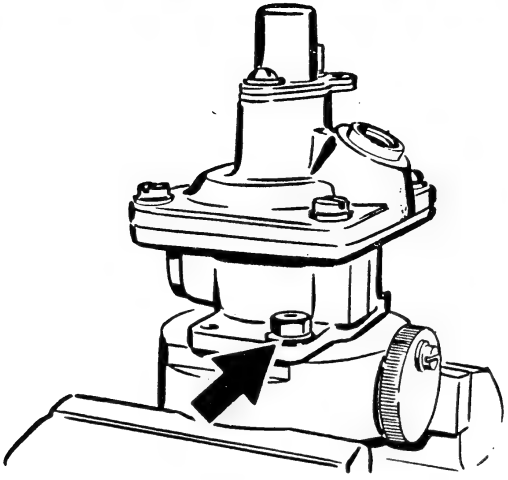


5. LDA WITH STOP DOG



420/487

6. TWO-STAGE LDA



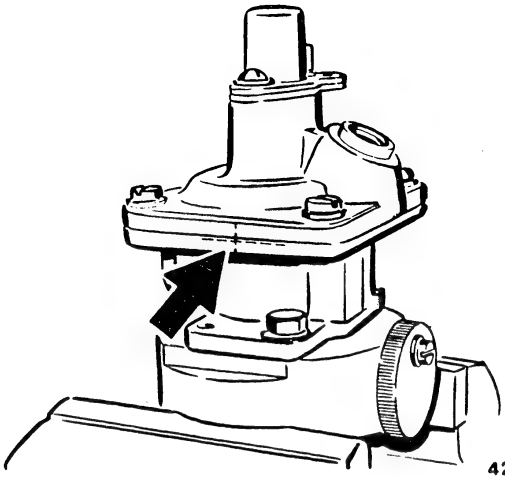
7. HORIZONTALLY MOUNTED STND. MANIFOLD-PRESS. COMP.

7.1 Disassembly

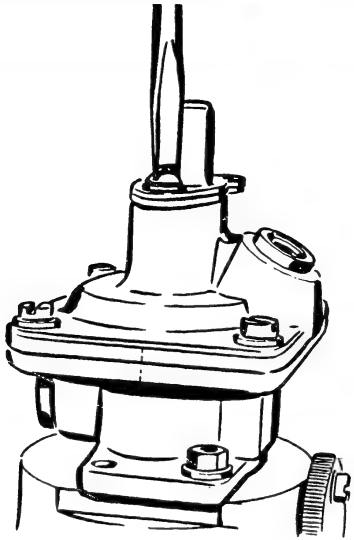
Remove the bracket from the lifting rod of the manifold-pressure compensator.

Clamp assembly tool KDEP 1544 in the vise. The arrangement of the guide pin and the threaded pin to hold the manifold-pressure compensator depends upon the compensator's hole pattern in the mounting flange of the manifold-pressure compensator housing.

Set the manifold-pressure compensator on the appropriate surface of the assembly tool KDEP 1544, and fasten it with a nut (arrow).

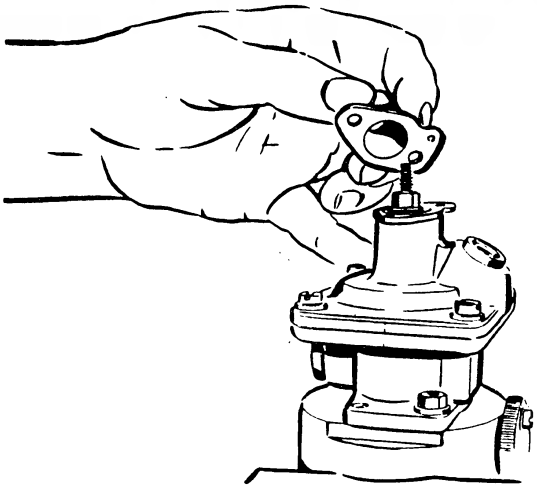


Using a marking needle, mark the position of assembly on the manifold-pressure compensator cover and housing (arrow).



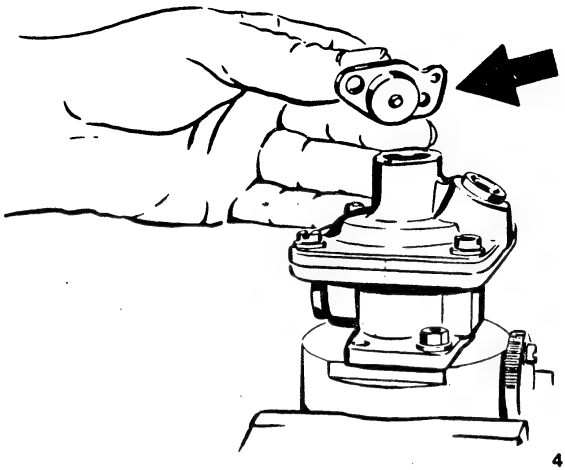
420/ 0038

Release and screw out the fastening screws on the protective cap.
In order for this to be possible on the breakaway screw, a slit must first be sawed into the head of the screw.



420/0039

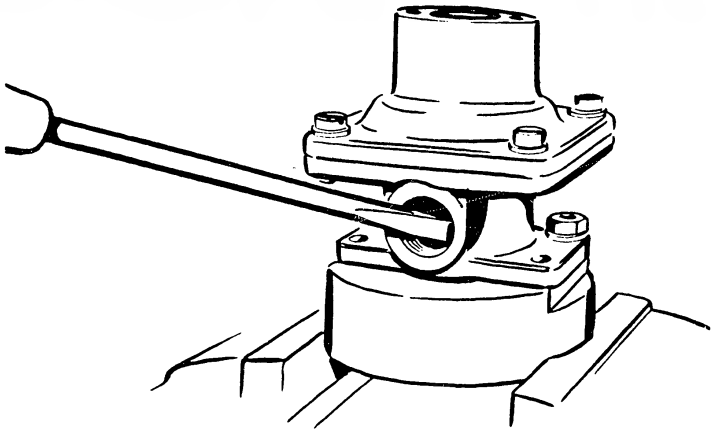
Take off the protective cap.



420/0040

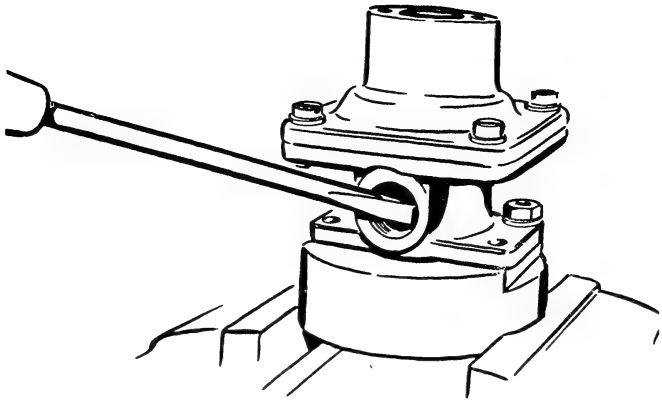
Take the stop assembly (arrow) out of the manifold-pressure compensator cover.

Remove the O-ring from the stop.



420/0042

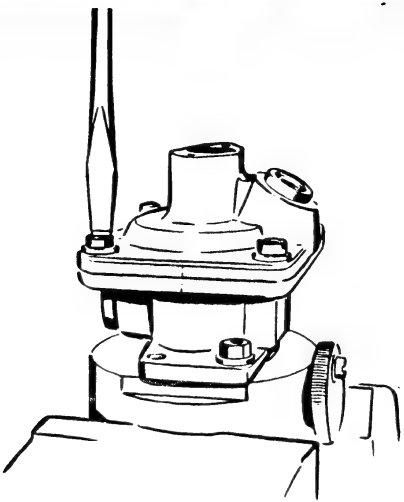
Using socket wrench set KDEP 1047, release the lock nut and unscrew the two nuts from the lifting rod of the manifold-pressure compensator.



420/0042

Release and screw out the screw plug from the manifold-pressure compensator housing.

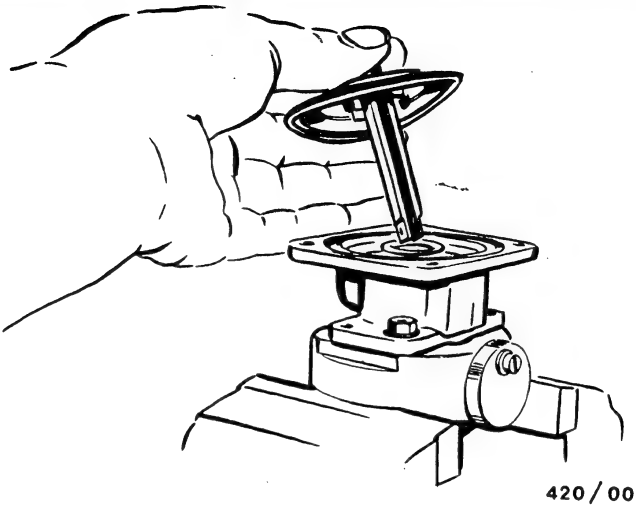
Using the screwdriver, screw the guide bushing in the manifold-pressure compensator all the way down into the manifold-pressure compensator housing. That unstresses the pressure spring in the manifold-pressure compensator as much as possible.



420/0043

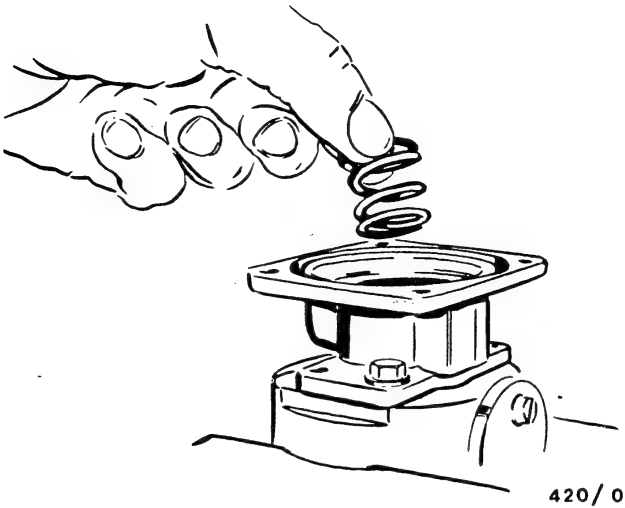
Release and screw out the fastening screws for the manifold-pressure compensator cover.
In order for this to be possible on the breakaway screw (arrow), a slid must first be sawed into its head.

Take off the manifold-pressure compensator cover.



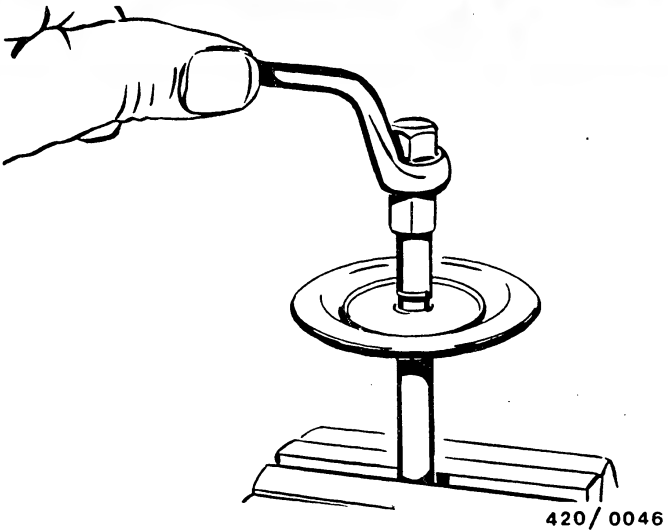
420/0044

Take the diaphragm assembly, consisting of the diaphragm, spring seats, slotted round nut, and spring washer, out of the manifold-pressure compensator housing and lay it to one side.



420/ 0045

Take the pressure spring out of the manifold-pressure compensator housing and lay it to one side. Unscrew the guide bushing from the manifold-pressure compensator housing. No further disassembly of the manifold-pressure compensator housing is possible. The spring clip to secure the guide nut is riveted into the manifold-pressure compensator housing and for that reason cannot be replaced with a new spring.



Clamp the diaphragm assembly in the vise on the flat surfaces of the lifting rod.

Release the slotted round nut using socket wrench KDEP 1546, and unscrew it from the lifting rod. Take the spring washer, the spring seats, and the diaphragm from the lifting rod.

Unclamp the lifting rod.

7.2 Cleaning of the parts

Wash out the parts in a non-combustible commercially-available cleaning agent.

Then blow them out with compressed air.

Follow the following safety regulations:

Regulations for Work with Combustible Fluids (Vbf) from the Federal Ministry of Labor (BmA).

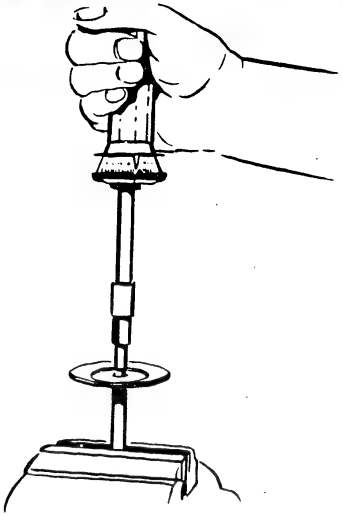
Safety Regulations for Handling of Chlorinated Hydrocarbons, for the plant: ZH1/222
for the employee: ZH1/119

from the Hauptverband der Gewerblichen Berufsgenossenschaften /Zentralverband für Unfallschutz und Arbeitsmedizin), Langwartweg 3, 5300 Bonn 5. (Central Association for Accident Prevention and Industrial Medicine).

In other countries, follow the corresponding regulations from the country in question.

7.3 Examination of the parts

After they are taken out, all parts are examined to see if there are defects that would prevent their being reused. In particular, check whether the diaphragm has cracks, porous spots, or fatigue breaks.
For the sake of safety, it is recommended that the diaphragm be replaced every time a repair is made. The O-ring for sealing the stop must be taken out and replaced in every case.



420/0047

7.4 Assembly

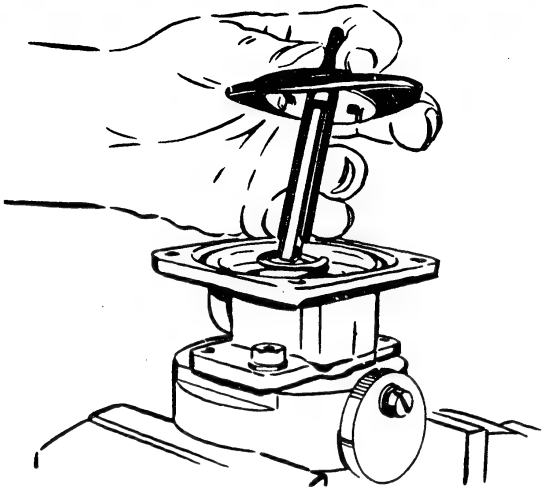
Clamp the lifting rod into the vise on the two machined surfaces.
First one seat disc is put on the lifting rod, then the diaphragm, and then the second seat disc. The diaphragm is put in in such a way that its shoulder is turned away from the thread on the lifting rod. Then the slotted round nut is screwed onto the thread and tightened using socket wrench KDEP 1546 and a torque screwdriver to the prescribed tightening torque of 3.5...4.0 Nm.

420/0048

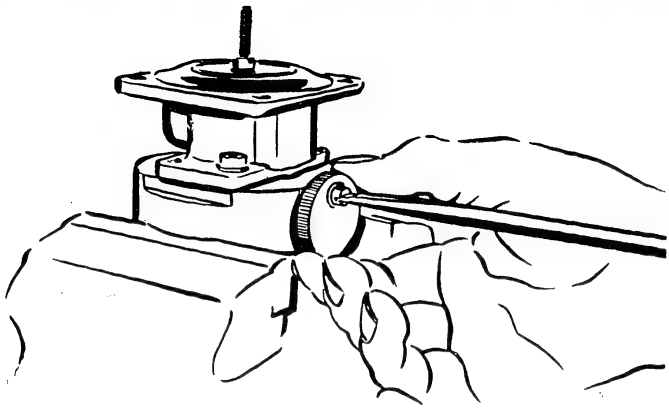
Set the manifold-pressure compensator housing on assembly device KDEP 1544 and fasten it with a hex nut.

Using a screwdriver, screw the guide busihing all the way down into the manifold-pressure compensator housing.

Set the pressure spring on the collar of the guide bushing.

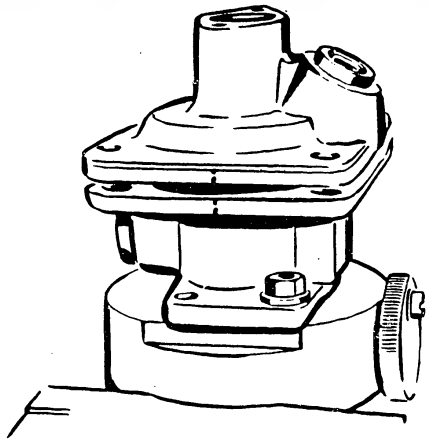


The pre-assembled diaphragm assembly is now put into the manifold-pressure compensator housing in such a way that the slot of the lifting rod is fixed in its installation position by the guide pin on assembly tool KDEP 1544.



420/ 0050

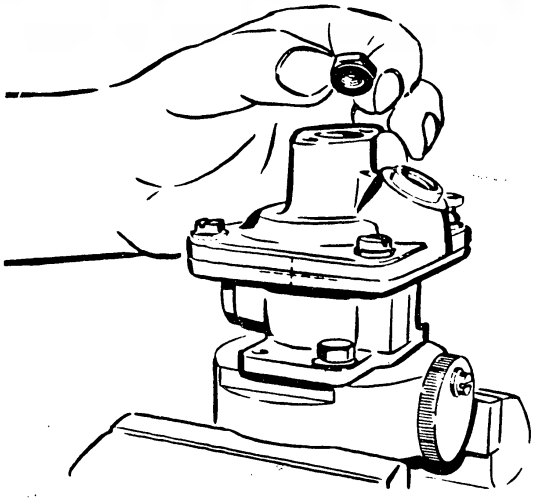
Turn the knurled handwheel on the fixing pin to the stop and tighten the fillister head screw.
That guarantees that the position of the slot on the lifting rod is correctly aligned with the position of the fastening holes in the manifold-pressure compensator housing flange. This is extraordinarily important because only in this way is a scraping of the lifting rod on the guide pin in the governor cover avoided.



420/0051

Then the manifold-pressure compensator cover is put on the housing in such a way that the auxiliary markings put on before disassembly line up with one another. Screw in the fastening screws for the manifold-pressure compensator cover and tighten to 5 ... 7 Nm.

The hex head on the new breakaway screw used is not broken off until after adjustment on the fuel-injection pump test bench.

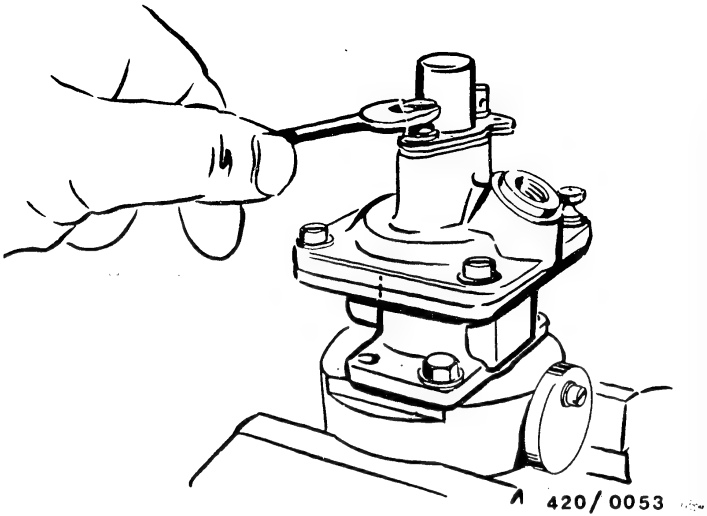


420/0052

Screw the round-neck nut, with its cylindrical shoulder in front, and the lock nut onto the thread of the lifting rod.
Adjustment is made on the fuel-injection test bench.

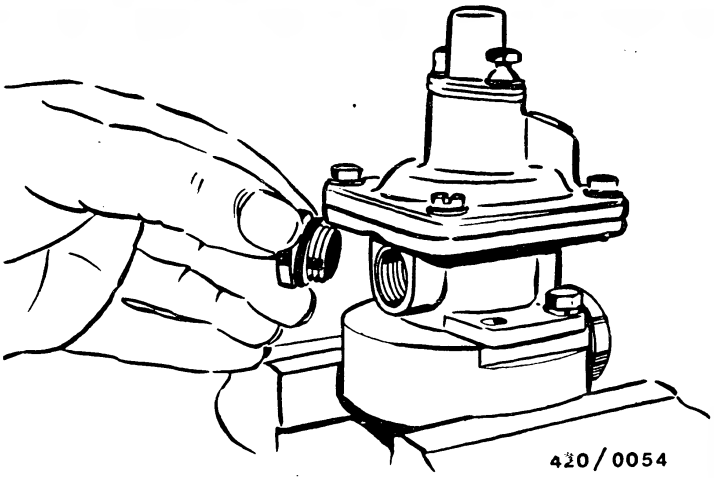
Put a new O-ring on the stop.

Screw the threaded pin into the plate of the stop, and the lock nut on to the threaded pin.
Adjustment is made on the fuel-injection test bench.



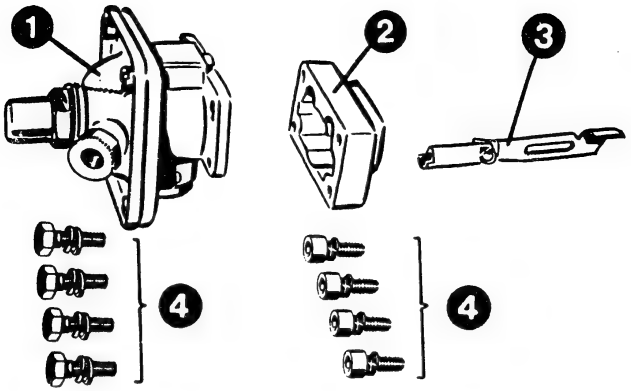
Insert the pre-assembled stop into the manifold-pressure assembly cover.
Be careful of the O-ring!

Set the protective cap on the stop and screw both parts down using the fastening screws on the manifold-pressure compensator cover. Do not tighten the fastening screws definitively, because the protective cap must be taken back off for adjustment of the manifold-pressure compensator on the fuel-injection pump test bench.



Screw the screw plug together with a new copper gasket ring into the manifold-pressure compensator housing, but do not tighten it fast.

Take the assembled manifold-pressure compensator off assembly tool KDEP 1544, and attach it to the proper governor.



420/ 0055

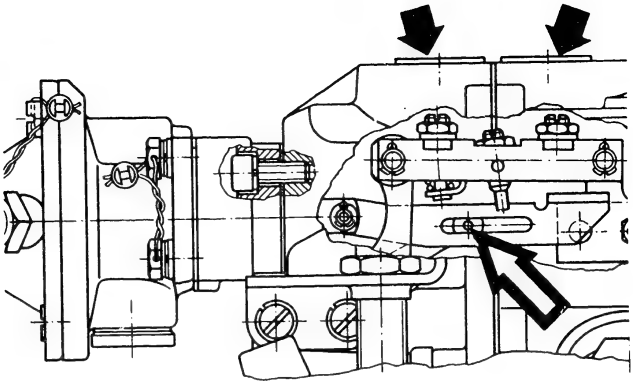
1 = Manifold-pressure compensator
2 = Intermediate housing
3 = Bracket
4 = Fastening screws

8. MANIFOLD-PRESSURE COMPENSATOR W.INTERMEDIATE HOUSING

8.1 Taking off manifold-pressure compensator and intermediate housing (only if necessary).

Release the hex screws on the manifold-pressure compensator. Lift the manifold-pressure compensator and remove it in an upward direction.

Release the socket-head screws on the intermediate housing. Lift off the intermediate housing, take out the bracket.



420/0056

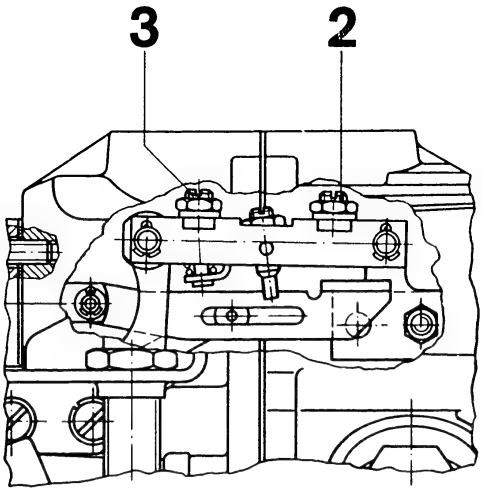
8.2 Putting on the intermediate housing and the manifold-pressure compensator

Unscrew the screw plugs (top arrows). When inserting the bracket into the upper opening on the governor cover, watch that the bracket points down until the control lever has been passed. Then raise the bracket and hang it into the guide pin on the rocker-arm (arrow).

The correct installation of the bracket can be checked through the top adjustment openings and the adjustment openings of the governor springs.

For mounting of the intermediate housing, hold bracket through the top adjustment opening using a screwdriver in such a way that the bracket extends as far as possible out of the top opening on the governor cover. Put in the intermediate housing (guide pin up) and fasten it with the socket hex screws. After that check that the position of the bracket is proper.

Before putting on the manifold-pressure compensator, the adjusting nuts and sleeves are to be released or set back. When putting on the manifold-pressure compensator, likewise hold the bracket firmly and insert the manifold-pressure compensator into the intermediate piece from the top. Shove the manifold-pressure compensator into the pilot and fasten it with the hex screws. Prescribed tightening torque: 5...7 Nm.

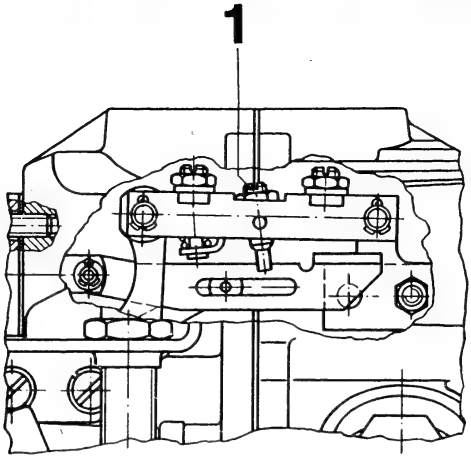


8.3 Basic adjustment of the internal torque control (if there is one).

Prestress the torque-control spring.
Adjust the setting screw (3) for the torque-control spring approx. flush with the nut and secure it in place.

Setting torque-control travel 0:

Screw setting screw (2) for torque-control travel up to the stop and secure in place with the nut.



420/ 0072

8.4 Adjusting the switchover point (if there is one):

(Use box wrench KDEP 1547.)
Check the "switchover point",blocking and unblocking of the automatic starting equipment. To do so, at increasing rotational speed (starting from n = 0 min^{-1}), move the control lever quickly from stop to full-speed.

Screwing the setting screw (1) further out produces a switchover point at a higher rotational speed.
If no switchover point is indicated, use 50...100 min^{-1} less than the lower nominal speed.

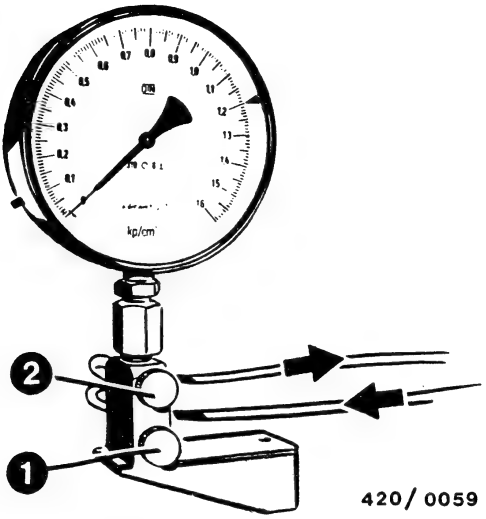
After each adjustment, secure the setting screw with a nut.

This switchover point must be checked very exactly:

There must be a guarantee that the assembly has been made properly. In particular, the bracket must be hung correctly into the guide pin of the rocker-arm.

With that, at a lower speed, starting control-rod travel and starting fuel delivery must be attained!

At a higher speed, only the full-load control-rod travel may be attained!



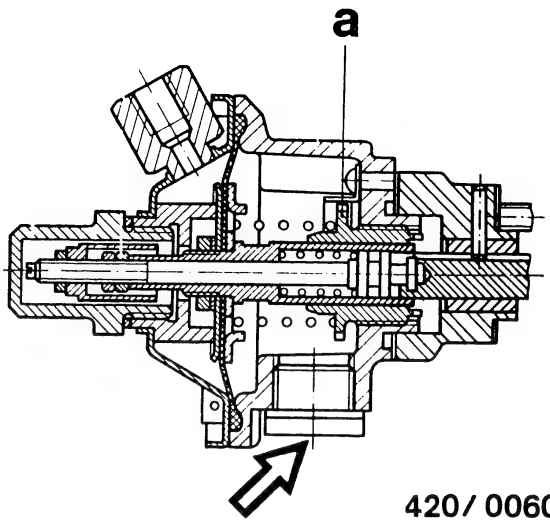
Adjusting screw 1 (bottom) for adjusting the pressure.

Screw plug 2 (top) to check the diaphragm chamber for leaks.

8.5 Manifold-pressure compensator adjustment (Section D)

Adjust the max. prescribed pressure at the pressure regulator (Section C).

Connect the pressure regulator to the lower connection on the adjusting throttle. Connect the manifold-pressure compensator to the upper connection on the adjusting throttle:



Setting (Beginning)

Drive the pump at the prescribed rotational speed. Unscrew the screw plug (arrow). At the prescribed pressure, change the spring stressing on the notched nut (a) using a screwdriver, until the proper change in control-rod travel as been attained.
Turning clockwise produces a greater pre-stressing
= start of adjustment at a higher pressure

Turning counter-clockwise produces a smaller pre-stressing
= start of adjustment at a lower pressure

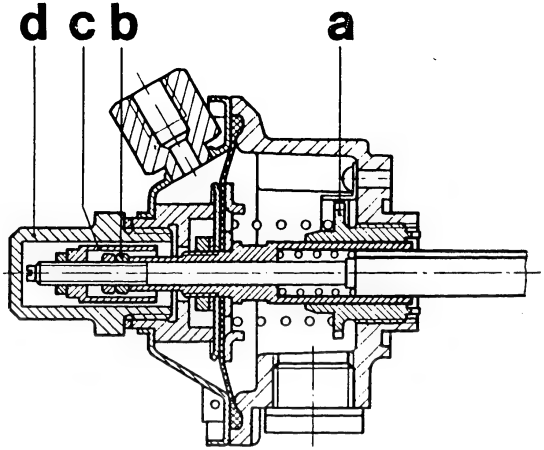
Measurement (procedure to the end)

Change the pressure on the adjusting throttle until the control-rod travel deviation has been attained. If the pressure reading is not within tolerance, take out and replace the manifold-pressure compensator spring.

8.6 Full-load control-rod travel and full-load fuel delivery

The full-load control-rod travel preset on Test Sheet, Section A, columns 1 to 3 and the associated fuel delivery correspond to the full-load fuel delivery in Section C, columns 1 and 2.

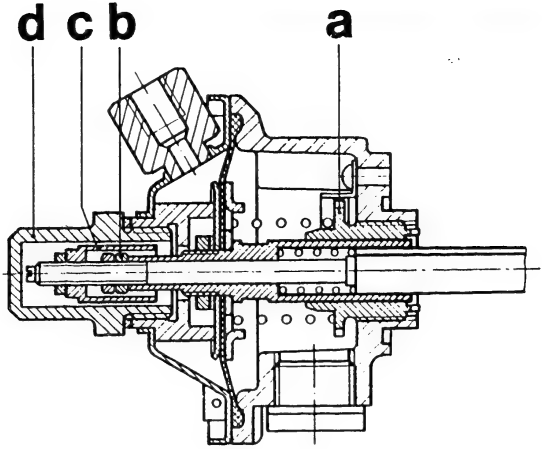
The rotational speed indicated in Section C, columns 1 and 2 and the fuel delivery must be attained in the prescribed 1000-stroke measurement. Pay particular attention to the difference in fuel delivery indicated in Section A, column 4 for the elements of a pump (ten times greater in the 1000-stroke measurement!).



420/ 0061

Adjust the full-load fuel delivery and control-rod travel for charging operation (max. charge-air pressure) using the sleeve (c) and nut.

The cap (d) and the gasket must be put on during these tests so that the pressure cannot escape!

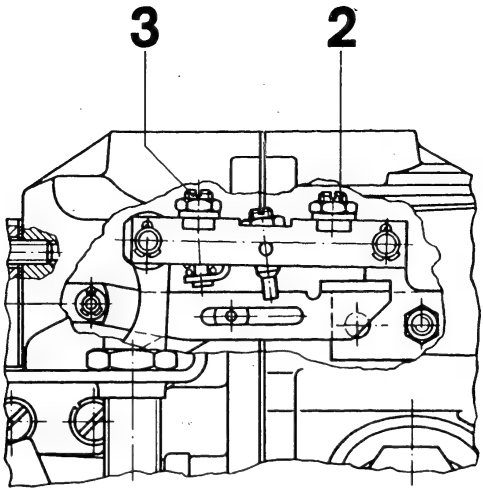


420/ 0061

Adjust the full-load fuel delivery for suction operation at 0 bar at the nuts (b).

8.7 Test for leaks - seal all openings on the manifold-pressure compensator.

Set 1.0 bar charge-air pressure. Close screw plug 2 on the adjusting throttle and shut off the air supply: the pressure gauge must not show a pressure drop greater than 0.03 bar within ten 10 sec.!

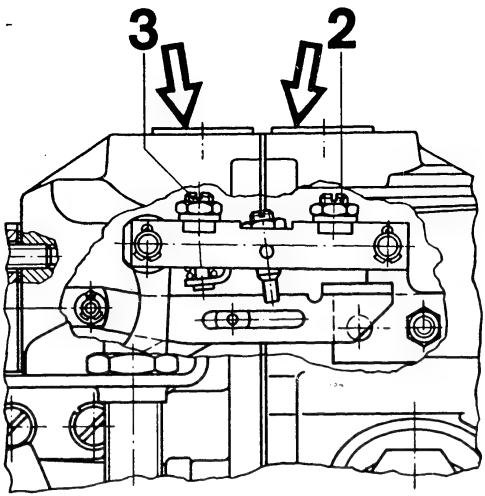


420/0071

8.8 Torque-control, changes in fuel-delivery

Adjust the torque-control travel:
At the lowest speed, adjust the torque-control travel using setting screw (2) and secure the screw in place.

If need be, press on the bracket with a screwdriver.



420/0057

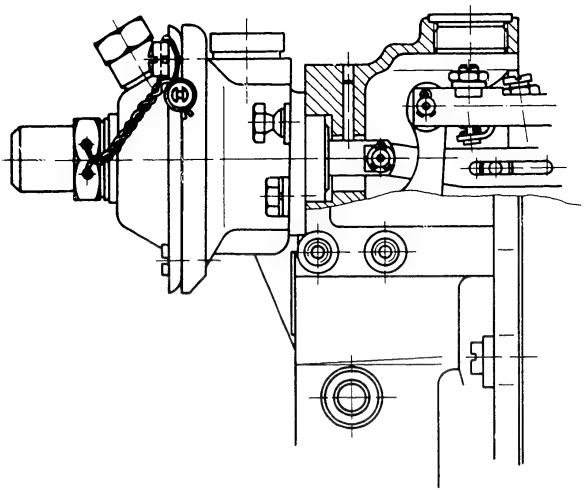
Adjusting the torque-control spring:

Adjust the setting screw (3) until the torque-control curve as shown in the test specifications sheet has been attained, and secure it in place.

Measure the changes in fuel delivery - Section C, columns 4...5.
If necessary, make corrections on setting screw (3).

In the case of governors with manifold-pressure compensators, the fuel delivery with the greatest charge-air pressure indicated applies.

Screw the screw plugs (arrows) back in.



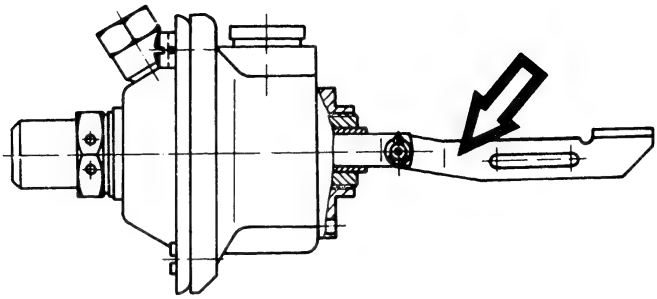
420/ 0063

9. MANIFOLD-PRESSURE COMPENSATOR WITHOUT INTERMEDIATE HOUSING (INTERIM MODEL)

The manifold-pressure compensator indicated is flanged directly to the cover of the governor and is adjusted like the stop with the intermediate housing.

9.1 Taking off

(only if necessary):
Remove the housing screws on the flange. Turn the flange lightly to the right and unhang the bracket from the rocker-arm guide pin. Take off the manifold-pressure compensator.



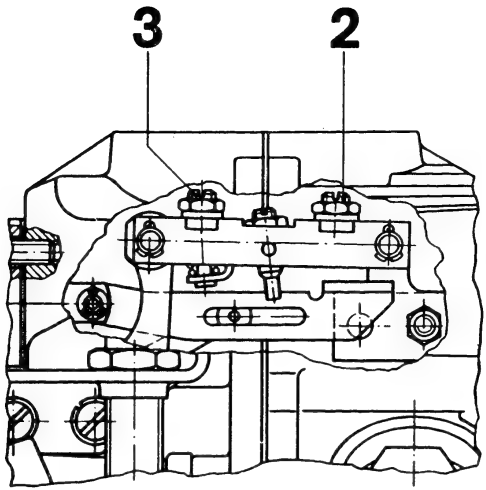
420/0064

Arrow = bracket

9.2 Putting on the manifold-pressure compensator

Control lever at stop. Insert the manifold-pressure compensator with the bracket (arrow) turned 90° to the left into the upper opening of the governor cover. Go past the control lever and hang the bracket on the guide pin of the rocker-arm. The correct installation of the bracket can be checked through the top adjusting openings in the governor housing or cover and via the hole in the cover of the spring chamber.
Tighten fastening screws and nuts to 5...7 Nm.

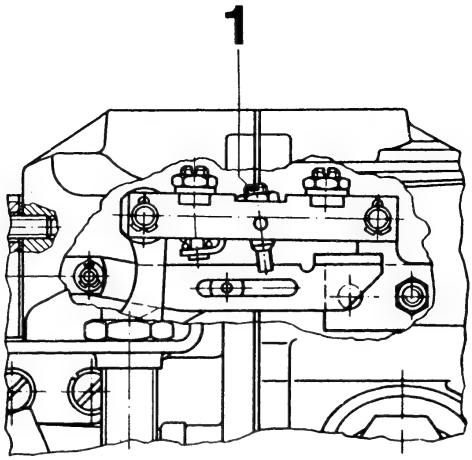
Note: The bracket is mounted in the manifold-pressure compensator housing so that it can turn. A secure hanging on the guide pin and freedom of movement of the bracket must be guaranteed.



9.3 Basic adjustment of the internal torque-control (if there is one).

Prestress the torque-control spring.
Adjust the setting screw (3) for the torque-control spring approx. flush with the nut, and secure it in place.

Setting torque-control travel 0:
Screw the setting screw (2) for torque control travel up to the stop and secure it with a nut.



420/0072

9.4 Adjusting the switchover point (if there is one)

(Use box wrench KDEP 1547).
Check the "switchover point", blocking and unblocking of the automatic starting equipment. To do so, at increasing rotational speed (starting from n = 0 min^{-1}) mover the control lever quickly from "stop" to "full speed".
Screwing the setting screw (1) further out produces a switchover at a higher rotational speed.
If no switchover point is indicated, use 50...100 min^{-1} less than the lower nominal rotational speed.

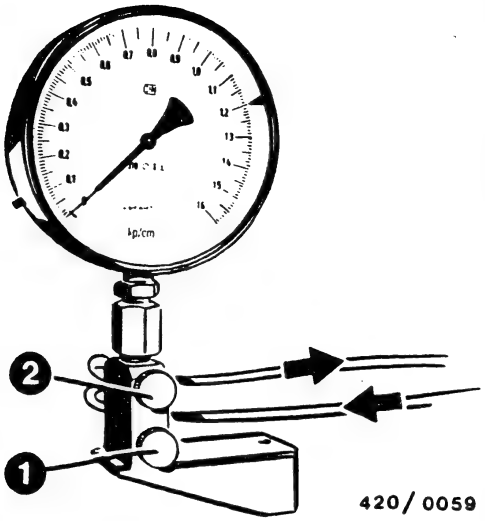
Secure the setting screw in place with a nut after each adjustment.

This switchover point must be checked very exactly:

There must be assurance that the assembly has been properly done. In particular, the bracket must be correctly hung on the guide pin of the rocker-arm.

With this, at a lower speed, the starting control-rod travel and/or starting-fuel delivery must be attained!

At a higher rotational speed, only the full-load control-rod travel may be attained!



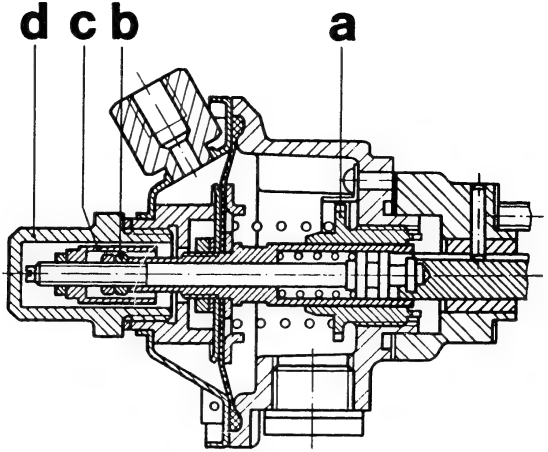
Setting screw 1 (bottom) for adjusting the pressure.

Screw plug 2 (top) for testing the diaphragm chamber for leaks.

9.5 Manifold-pressure compensator - adjustment (Test Sheet, Section D)

Set the max. pressure prescribed (Test Sheet, Section C) on the pressure regulator.

Connect the pressure regulator to the lower connection on the adjusting throttle. Connect the manifold-pressure compensator to the upper connection on the adjusting throttle.



420/ 0061

Adjusting nuts

a = Notched nut for spring prestressing
b = for suction flow
c = for charging flow
d = Closure cap for seal

Adjustment (Beginning):
At the prescribed pressure, change the spring prestressing on the notched nut (a) until the proper change in control-rod travel has been attained.

Turning clockwise produces a greater prestressing
= Start of adjustment at a higher pressure

Turning counter-clockwise produces a lower prestressing
= Start of adjustment at a lower pressure

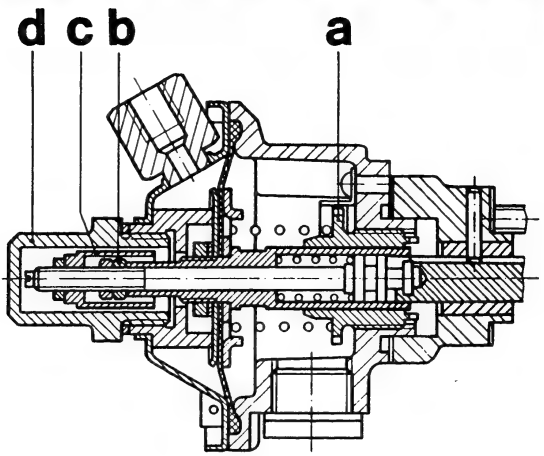
Measurement (Procedure to the end):
Change the pressure on the setting throttle until the rod-travel change has been attained. If the reading for pressure is not within tolerance, take out and replace the manifold-pressure compensator spring.

9.6 Full-load control-rod travel and fuel delivery

The full-load control-rod travel preset in the Test Sheet Section A, columns 1 to 3 and the pertinent fuel delivery correspond to the full-load fuel delivery indicated in Section C, columns 1 and 2.

The rotational speed indicated in Section C, columns 1 and 2 and fuel-delivery must be attained at the prescribed 1000 stroke measurement.

Pay particular attention to the difference indicated in Section A, column 4 for the fuel delivery of the elements of a pump (ten times greater in the 1000 stroke measurement!)



420/ 0061

Full-load fuel delivery with manifold-pressure comp.

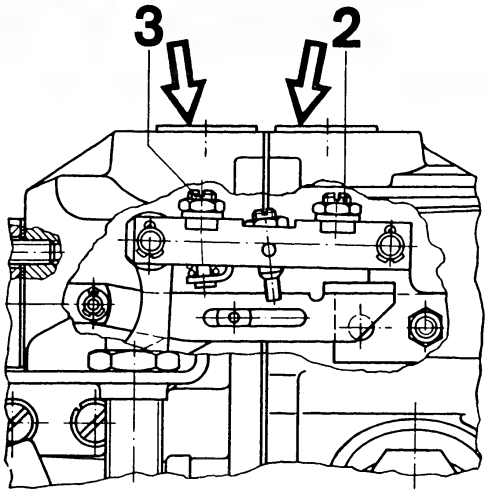
Adjust the full-load fuel delivery and/or control-rod travel for charging operation (max. charge-air pressure) using the sleeve (c) and nut.

The cap (d) and gasket must be on for these tests so that the pressure cannot escape!

Adjust the full-load fuel delivery for suction operation at 0 bar at the nuts (b).

9.7 Testing for leaks (Seal all openings on the manifold-pressure compensator).

Set 1.0 bar charge-air pressure. Close screw plug (2) on the adjusting throttle and shut off the air supply: The pressure gauge must not show a pressure drop greater than 0.03 bar within 10 sec.!

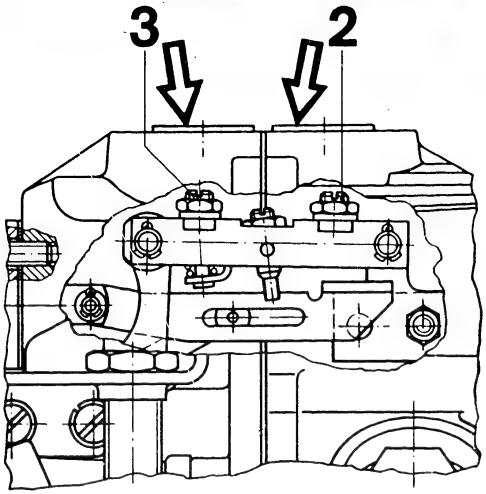


420/0057

9.8 Torque control, changes in fuel delivery

Adjust the torque-control travel:
At the minimum rotational speed, adjust the torque-control travel using setting screw (2), and secure the screw in place.

If need be, press on the bracket with a screwdriver.

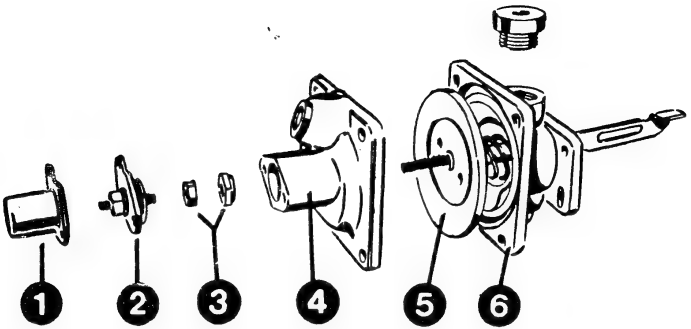


420/0057

Adjusting the torque-control spring:
Adjust the setting screw (3) until the torque-control curve as shown in the Test Specifications Sheet has been attained, and secure it in place.

Measure the changes in fuel delivery. Test Sheet, Section C, columns 4...5. If necessary, make corrections at setting screw (3).

In the case of governors with a manifold-pressure compensator, the fuel delivery with the greatest charge-air pressure indicated applies.



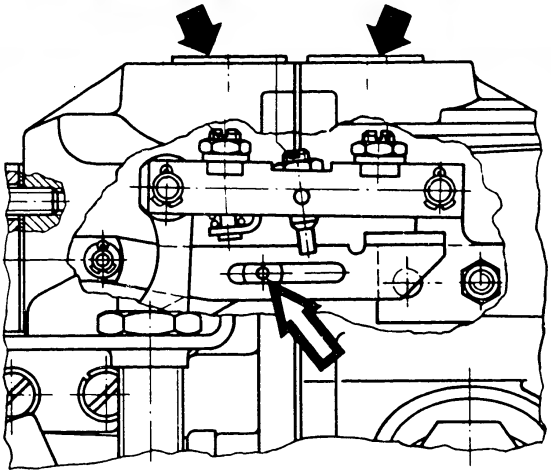
420/0065

1 = Protective cap
2 = Screw and nut for suction flow
3 = Nuts for charging flow
4 = Cover with pressure connection
5 = Diaphragm with spring, threaded pin, and bracket
6 = Housing with notched nut

10. MANIF.-PRESS.COMPENSATORS WITHOUT INTERMEDIATE HOUSING (STANDARD MANIFOLD-PRESSURE COMPENSATORS)

10.1 Taking off

Remove housing screws and nuts on the flange. Turn the flange lightly to the right and unhang the bracket from the guide pin on the rocker-arm. Take off the manifold-pressure compensator.

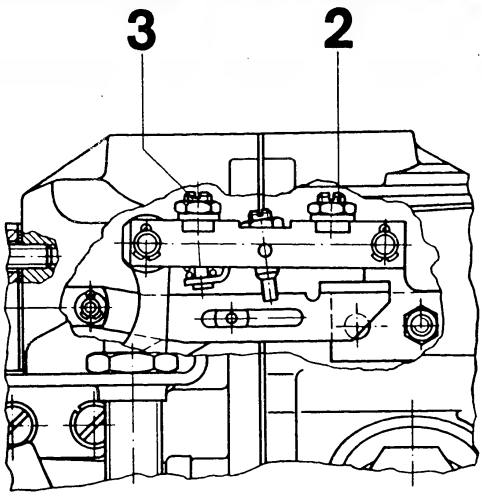


420/ 0066

10.2 Putting on the manif.-pressure compensator

Screw the screw plugs (top arrows) out. Control lever at stop. Insert the manifold-pressure compensator with the bracket turned 90° to the left into the top opening on the governor cover. Go past the control lever and hang it on the rocker-arm guide pin (arrow).

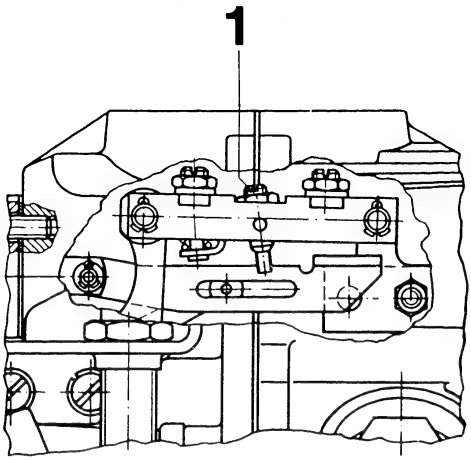
The correct installation of the bracket can be checked through the top adjustment openings in the governor housing or cover and via the hole in the spring chamber closure. Tighten the fastening screws and nuts to 5...7 Nm.



10.3 Basic adjustment of the internal torque control (if there is one)

Prestress the torque-control spring:
Adjust the setting screw (3) for the torque-control spring approximately flush with the nut and secure it in place.

Setting torque-control travel 0:
Screw setting screw (2) for torque-control travel up to the stop and secure it in place with a nut.



420/0072

10.4 Adjustment of switchover point (if there is one)

(Use box wrench KDEP 1547)
Check the "switchover point", blocking and unblocking of the automatic starting equipment. To do so, with increasing rotational speed (starting from n = 0 min^{-1}), move the control lever quickly from "stop" to "full speed".

Screwing the setting screw (1) further out produces a switchover point at a higher rotational speed.

If no switchover point has been indicated, use 50...100 min^{-1} less than the lower nominal rotational speed.

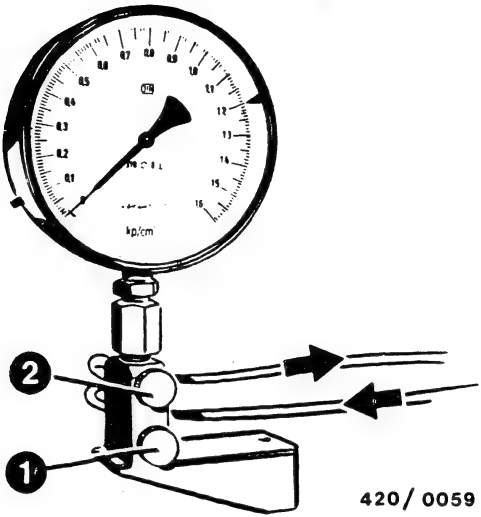
After each adjustment, secure the setting screw in place with a nut.

This switchover point must be checked very exactly:

There must be assurance that the assembly has been properly done. In particular. the bracket must be hung correctly on the guide pin of the rocker-arm.

With that, at a lower rotational speed, the starting control-rod travel and starting fuel delivery must be attained!

At a higher rotational speed, only the full load control-rod travel may be attained!



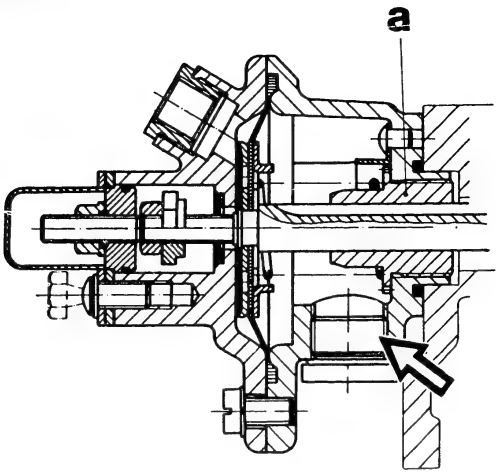
Setting screw 1 (bottom) for setting the pressure.
Screw plug 2 (top) for testing the diaphragm chamber for leaks.

Connect the pressure regulator to the lower connection on the adjusting throttle.
Connect the manifold-pressure compensator to the upper connection on the adjusting throttle:

10.5 Manifold-pressure compensator - adjustment

Set the max. prescribed pressure at the pressure regulator.
Rotational speed according to Test Sheet, Section D.
Control lever at full speed.
Testing with
falling pressure = Decrease in control-rod travel

Testing with
rising pressure = Increase in control-rod travel



420/0067

Adjustment (Beginning)

At the prescribed pressure, change the spring prestressing at the notched nut until the proper change in control-rod travel is attained (a in the Figure). To do so, remove the screw plug (arrow).

Turning clockwise produces a greater prestressing
= Start of adjustment at a higher pressure

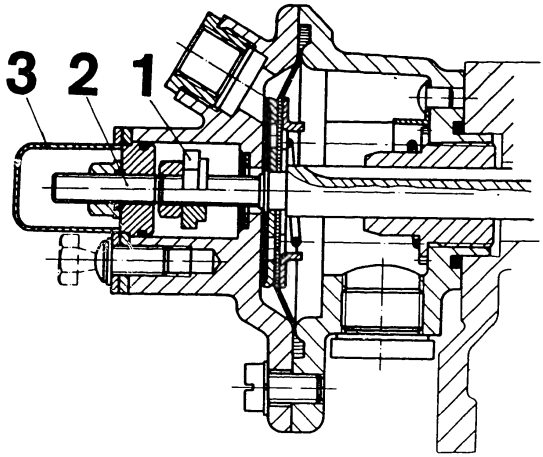
Turning counter-clockwise produces a lower prestressing
= Start of adjustment at a lower pressure

Measurement (Procedure to the end)

Change the pressure at the adjusting throttle until the change in control-rod travel has been attained. If the reading for pressure is not within tolerance, take out and replace the manifold-pressure compensator spring.

10.6 Full-load fuel delivery with manifold-press.comp.

The rotational speed indicated in the Test Sheet, Section C, columns 1 and 2 and the fuel delivery must be attained in the prescribed 1000-stroke measurement. Pay particular attention to the difference indicated in the Test Sheet, Section A, column 4 for the fuel deliveries from the elements of a pump (10 times greater in the 1000-stroke measurement!).

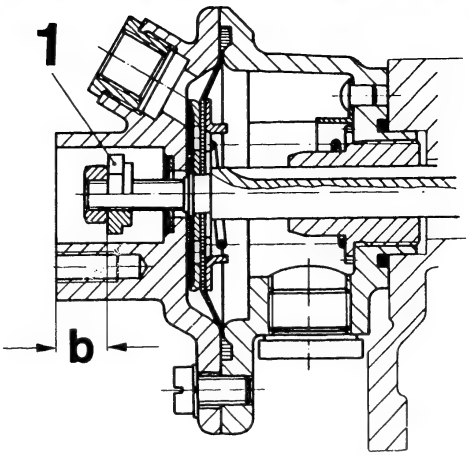


420/0068

Drive the fuel-pump assembly at the rotational speed prescribed in Section D of the Test Sheet, and subject the manifold-pressure compensator to the indicated pressure.

Take reading for control-rod travel. Shut off the test bench and the charge-air pressure. If the reading does not agree with the prescribed control-rod travel, unscrew the fastening screws for the protective cap (3) and remove the protective cap and stop (2).

Adjusting the control-rod travel as described in Section D with the maximum charge-air pressure is made at the nut (1) of the manifold-pressure compensator using the socket wrench set KDEP 1047.



420/0069

Bring the control rod into the stop position and using a feeler gauge, measure the distance (b) from the face of the manifold-pressure compensator cover to the face of the setting nut (1).

Using the socket wrench set KDEP 1047, release the lock nut for the setting nut (1) and turn it back somewhat. Screw the setting nut in or out by the difference in dimension as calculated.

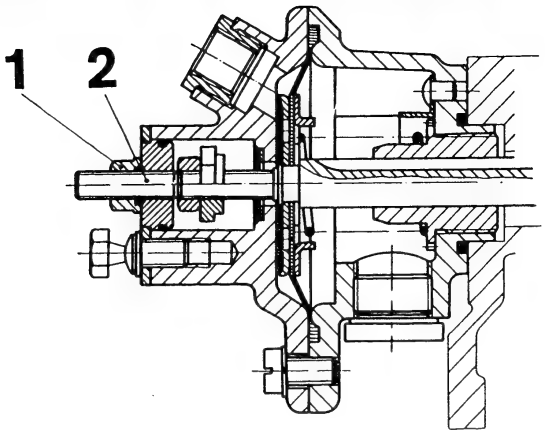
Example of calculation for difference in dimension:

Control-rod travel accord.to Test Sheet (Spec.)= 9.7 mm
Control-rod travel as measured (Actual) = 10.9 mm

Difference = 1.2 mm

If, as in this example, the control-rod travel as measured is greater than the prescribed travel, screw the setting nut (1) in by the difference.

After that, the lock nut is tightened again and the stop (2) and the two fastening screws are mounted on the manifold-pressure compensator cover.

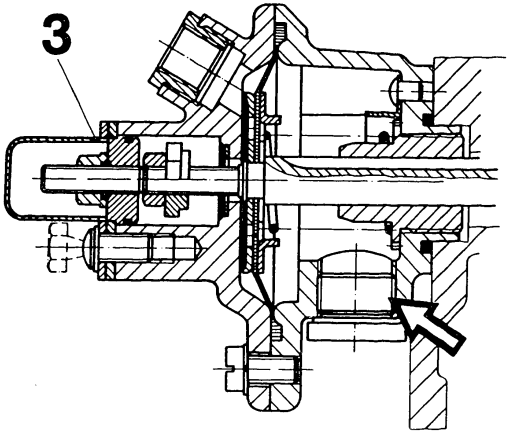


420/0070

Adjusting suction flow

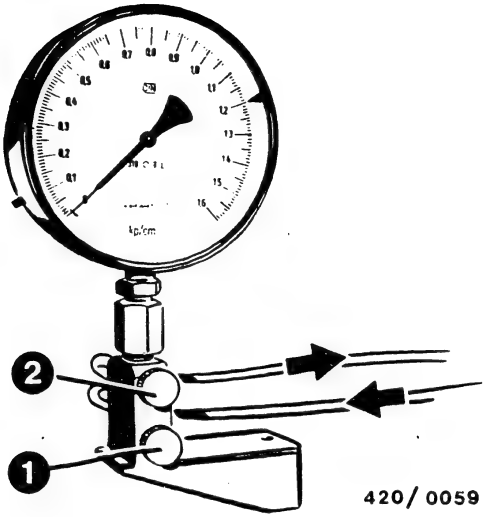
Measure the control-rod travel at charge-air pressure 0 bar and compare it with the control-rod travel as prescribed in the Test Sheet, Section D.

If the control-rod travel as measured is less than prescribed, release the hex nut (1) using the adjusting tool KDEP 1048, and screw threaded pin (2) of the stop in until attaining the control-rod travel as prescribed.



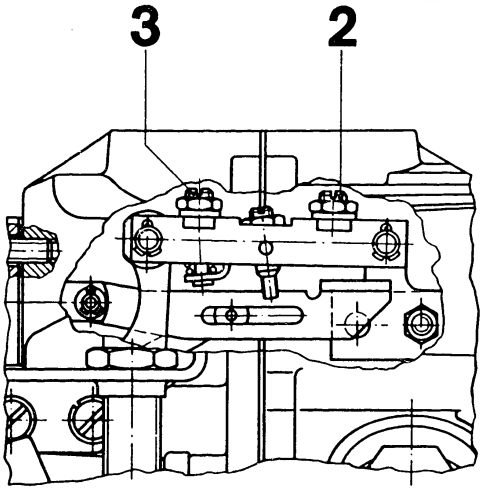
420/ 0071

Screw the protective cap (3) back on the manifold-pressure compensator. Prescribed tightening torque for the fastening screw: 5...7 Nm.



10.7 Testing for leaks

Seal all openings on the manifold-pressure compensator. Set 1.0 bar charge-air pressure. Close screw plug 2 on the adjusting throttle and shut off the air. The pressure gauge must not indicate a pressure drop greater than 0.03 bar within 10 sec.

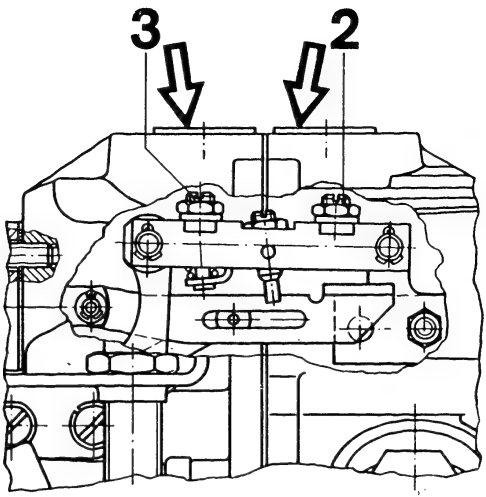


420/0071

10.8 Torque control, changes in fuel delivery (if indicated)

Adjusting torque-control travel:
At the lowest rotational speed, adjust the torque-control travel using setting screw (2), and secure the screw in place.

If need be, press on the bracket using a screwdriver.



420/0057

Adjusting the torque-control spring:
Adjust the setting screw (3) until the change in torque-control as called for in the Specification Sheet is attained, and secure it in place.

Measure the changes in fuel deliveries (Test Sheet, Section C, columns 4...5). If necessary, make corrections at setting screw (3).

In the case of governors with manifold-pressure compensators, the flow with the greatest charge-air pressure indicated applies.

Screw the screw plugs (arrows) back in.

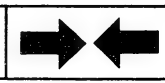
11. SECURING AND SEALING

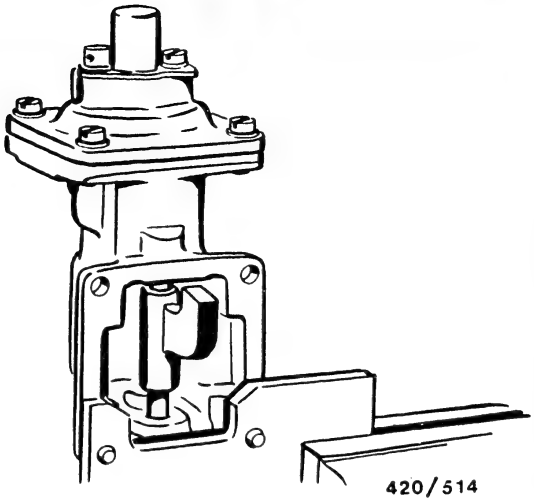
Tighten screws and nuts to the prescribed tightening torque.

Secure stop screws with varnish or wire and seal them. (Where the safety locks on arrival of the compensator can be identified, put corresponding safety locks back on.

Put on the repair stamp and stamp in the workshop identification.

M. B.:
The repair stamp and the workshop identification must be taken off and replaced every time the full-load fuel delivery and/or rotational speed are (later) changed!

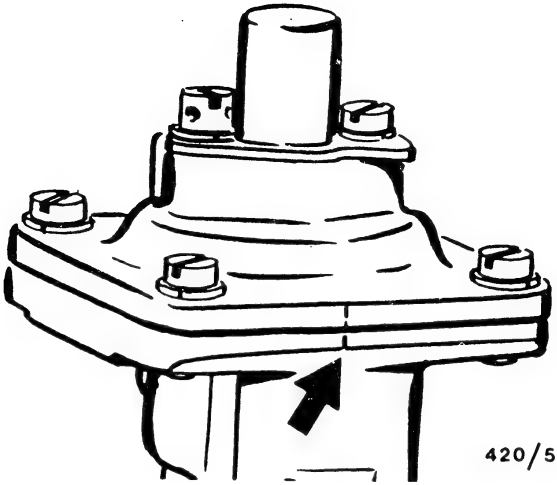




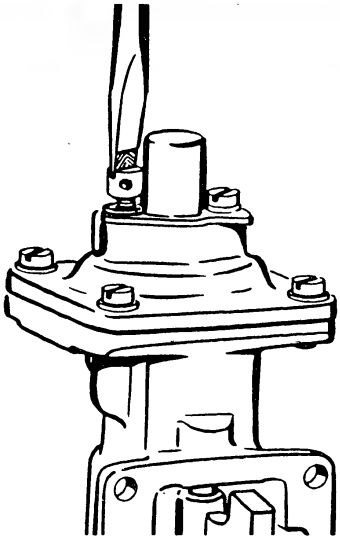
12. LDA WITH STOP DOG (MACK CO.)

12.1 Disassembly

Bolt tight the manifold-pressure compensator onto the assembly plate KDEP 1628. Clamp the assembly plate in the vise.

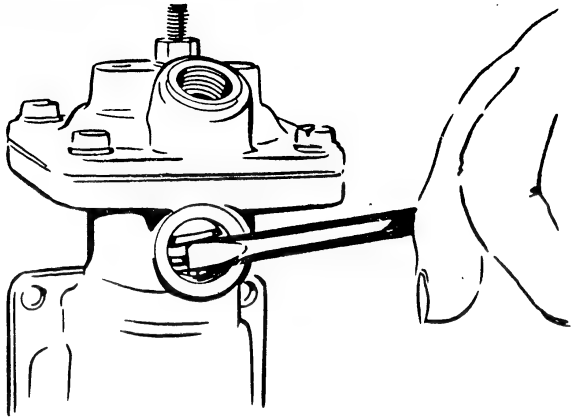


Using a marking needle, mark the position of assembly on the manifold-pressure compensator cover and housing (arrow).



420/516

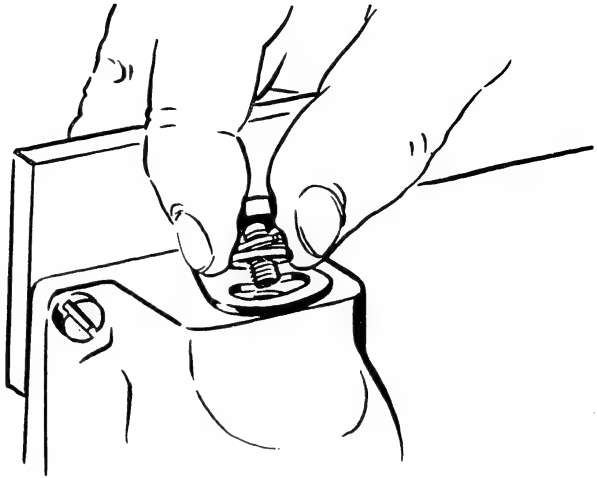
Loosen the fastening screws of the protective cap and unscrew. Remove protective cap.



420/517

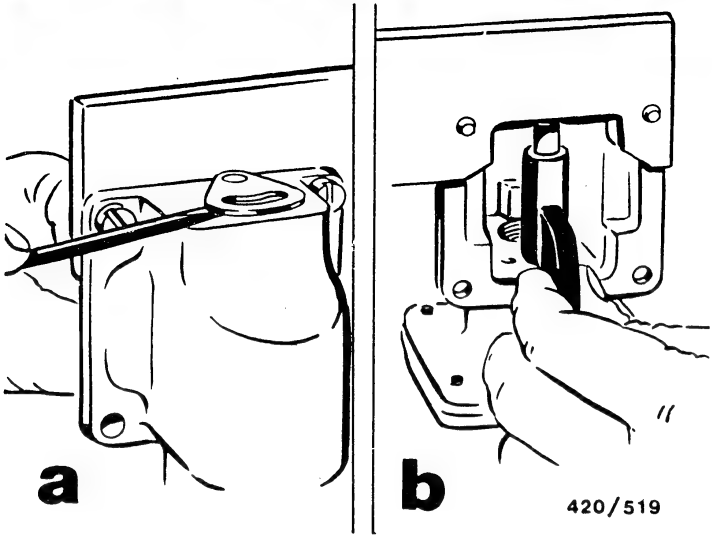
Loosen screw plug of the manifold-pressure compensator housing and unscrew.

Using a screwdriver, screw the guide bushing in the manifold-pressure compensator fully down into the manifold-pressure compensator housing. In this way, the tension on the helical compression spring in the manifold-compensator is relieved as far as possible.

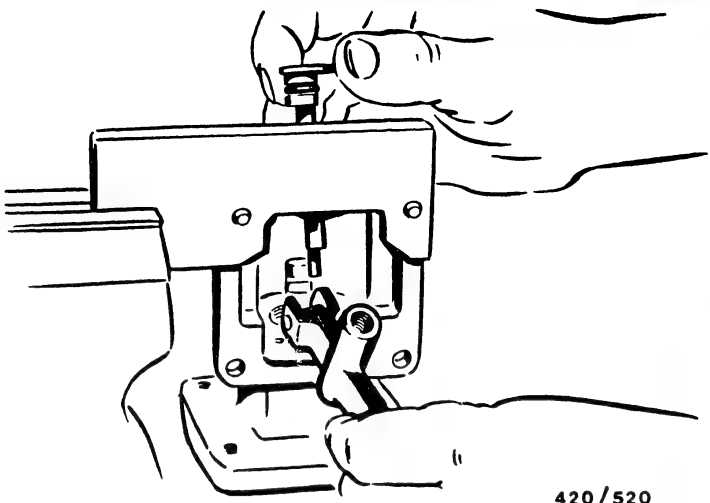


420/518

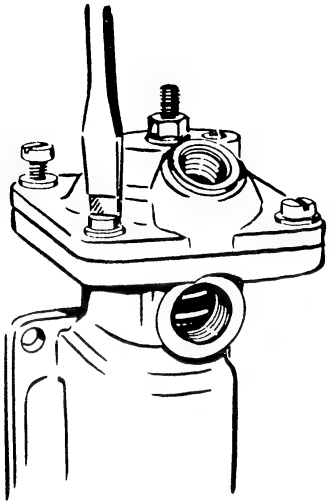
Loosen locking screw for the strap of the eccentric shaft and unscrew.



Push screwdriver beneath the stap and carefully lever the strap together with the eccentric shaft out of the locating bore (illustration a).
Hold the stop dog in position with the other hand (illustration b).

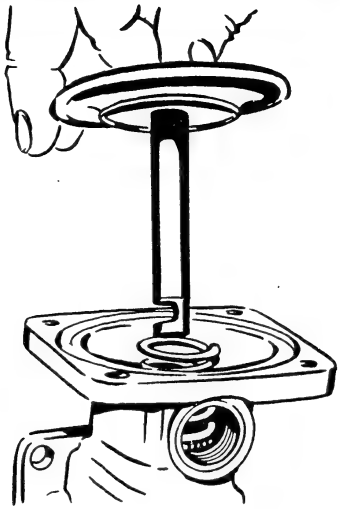


Remove the eccentric shaft and stop dog from the manifold-pressure compensator housing.
Remove O-ring from the eccentric shaft.



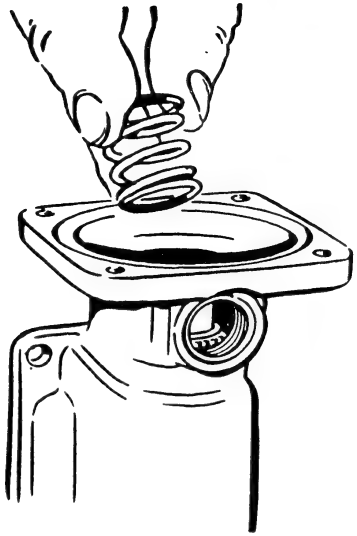
420/521

Loosen the fastening screws of the manifold-pressure compensator cover and unscrew.
Remove the manifold-pressure compensator cover.



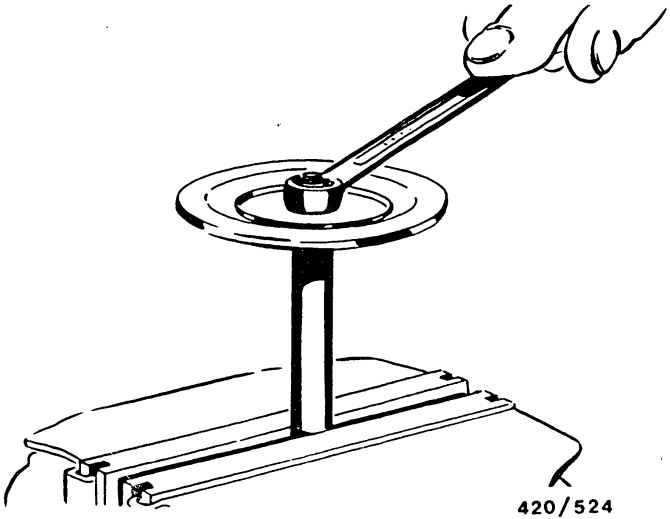
420/522

Take the diaphragm assembly, consisting of the diaphragm, spring seats, slotted round nut, and spring washer, out of the manifold-pressure compensator housing and lay it to one side.



420/523

Take the pressure spring out of the manifold-pressure compensator housing and lay it to one side. Unscrew the guide bushing from the manifold-pressure compensator housing. No further disassembly of the manifold-pressure compensator housing is possible. The spring clip to secure the guide nut is riveted into the manifold-pressure compensator housing and for that reason cannot be replaced with a new spring.



Clamp the diaphragm assembly with the lower end (milled surface) of the stroke rod into the vise.
Loosen hexagon nut and unscrew from the stroke rod.
Remove spring seat and diaphragm from the stroke rod.
Unclamp the stroke rod.

12.2 Cleaning of the parts

Wash out the parts in a non-combustible commercially-available cleaning agent.

Then blow them out with compressed air.

Follow the following safety regulations:

Regulations for Work with Combustible Fluids (Vbf) from the Federal Ministry of Labor (BmA).

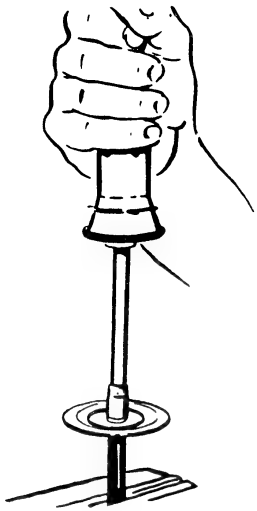
Safety Regulations for Handling of Chlorinated Hydrocarbons, for the plant: ZH1/222
for the employee: ZH1/119

from the Hauptverband der Gewerblichen Berufsgenossenschaften /Zentralverband für Unfallschutz und Arbeitsmedizin), Langwartweg 3, 5300 Bonn 5. (Central Association for Accident Prevention and Industrial Medicine).

In other countries, follow the corresponding regulations from the country in question.

12.3 Examination of the parts

After they are taken out, all parts are examined to see if there are defects that would prevent their being re-used. In particular, check whether the diaphragm has cracks, porous spots, or fatigue breaks.
For the sake of safety, it is recommended that the diaphragm be replaced every time a repair is made. The O-ring for sealing the stop must be taken out and replaced in every case.

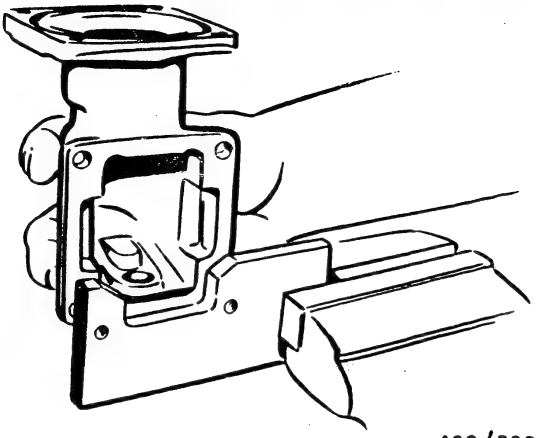


420/525

12.4 Assembly

Clamp the stroke rod with the lower end (milled surface) in the vise.

Positioned first of all on to the stroke rod is a plate washer, then the diaphragm, and lastly the other plate washer. The diaphragm is fitted in such a way that its shoulder is facing away from the thread of the stroke rod. Then the hexagon nut is screwed onto the thread and tightened with a torque wrench to the specified tightening torque of 3.5...4.0 Nm.



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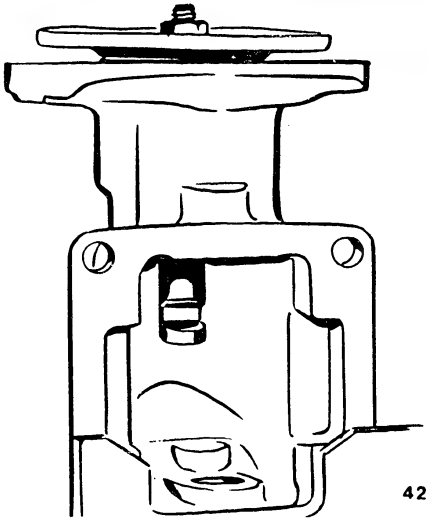
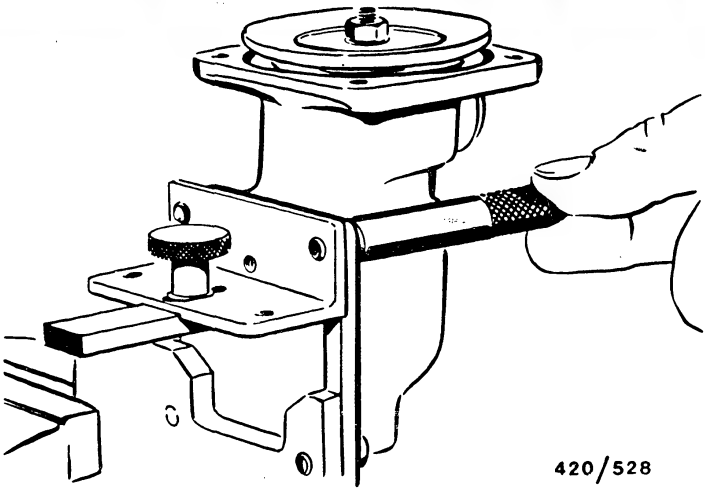
Clamp assembly plate KDEP 1628 in the vise and secure the manifold-pressure compensator housing on the assembly plate.

Using a screwdriver, screw the guide bushing fully down into the manifold-pressure compensator housing.

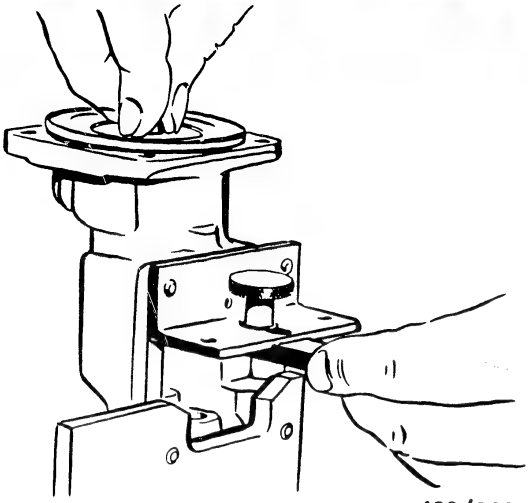
Position the helical compression spring onto the collar of the guide bushing.



Insert the pre-assembled diaphragm assembly into the guide bore of the manifold-pressure compensator housing in such a way that the groove in the stroke rod points toward the opening of the manifold-pressure compensator housing.

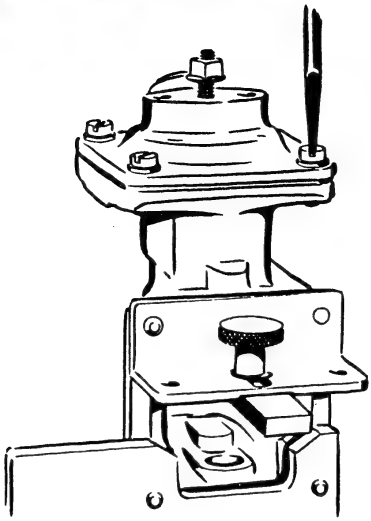


Loosen the clamping screw of the calibrating mechanism KDEP 1629 and secure the whole mechanism onto the manifold-pressure compensator housing.



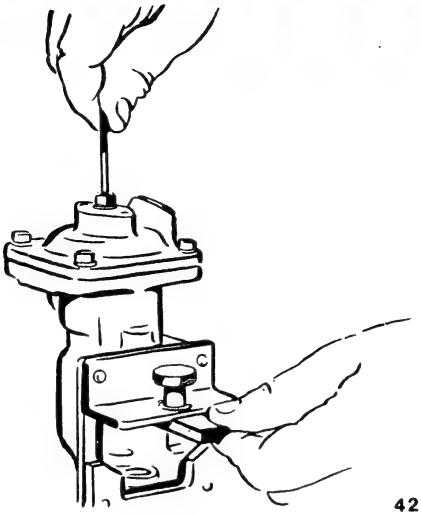
420/529

By pushing on the diaphragm plate, push the stroke rod downward until the moveable strap of the calibrating mechanism KDEP 1629 can be guided into the groove of the stroke rod. Tighten the clamping screw.



420/530

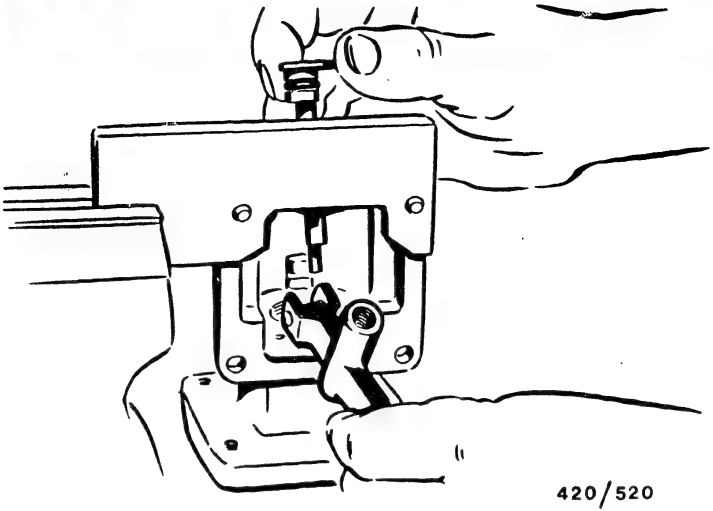
Screw stopscrew in LDA cover out so far until it is flush with the innermost edge of the housing.
Then the manifold-pressure compensator cover is put on the housing in such a way that the auxiliary markings put on before disassembly line up with one another.
Screw in the fastening screws for the manifold-pressure compensator cover and tighten to 5 ... 7 Nm.



420/531

Loosen the clamping screw of the calibrating mechanism KDEP 1629. Screw adjusting screw "a" so far into the manifold-pressure compensator cover until the moveable strap of the calibrating mechanism can be pulled out of the groove of the stroke rod.

Remove the calibrating mechanism from the manifold-pressure compensator housing.

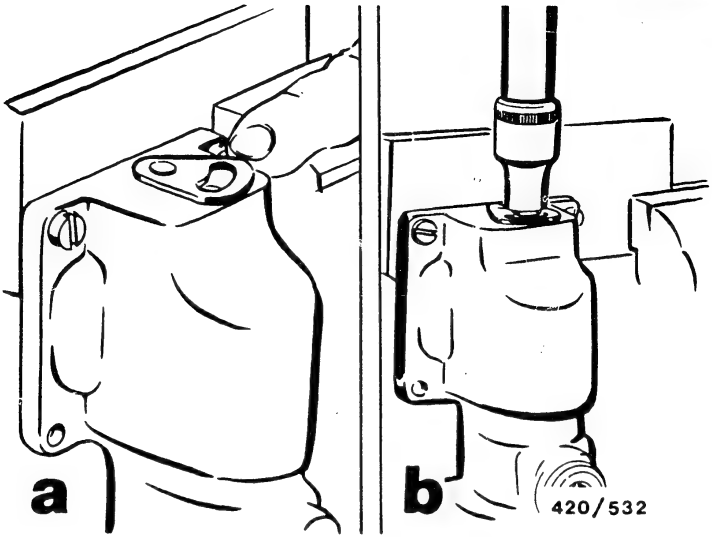


420/520

Insert the new O-ring into the groove in the eccentric shaft provided for this purpose.

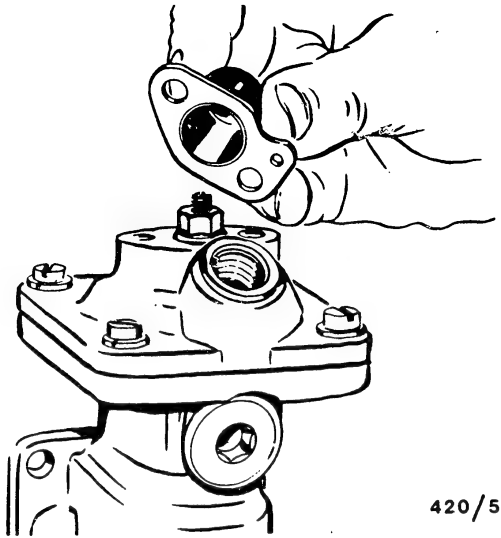
Insert the stop dog into the large housing opening of the manifold-pressure compensator in such a way that the ground stop surface points in the direction of the manifold-pressure compensator cover.

With the other hand, insert the eccentric shaft into the manifold-pressure compensator housing bore provided for this purpose. Position the stop dog onto the eccentric shaft and push the shaft as far as it will go.



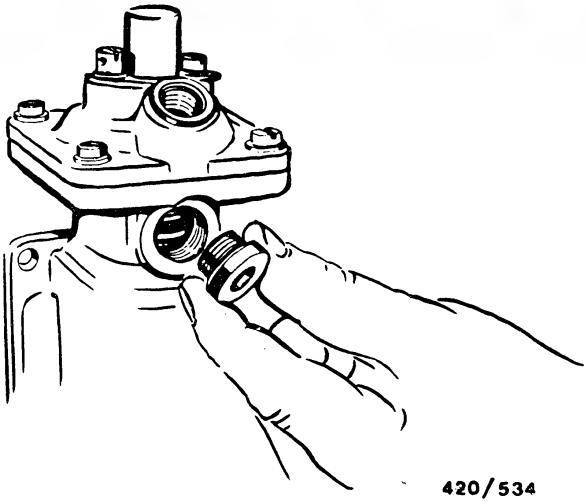
Turn the eccentric shaft at the strap in such a way that in the center position of the slot, the clamping screw may be screwed into the threaded bore in the manifold-pressure compensator housing provided for this purpose (illustration a).

Screw in the clamping screw and tighten to 5...6 Nm (illustration b).



420/533

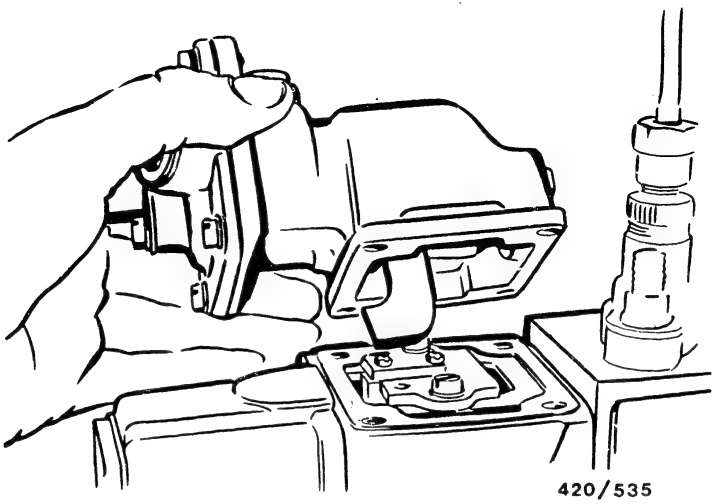
Position the protective cap onto the stop and screw tight on the manifold-pressure compensator cover with the fastening screws. Do not tighten the screws fully, since the protective cap must be removed for adjustment of the manifold-pressure compensator on the injection-pump test bench.



420/534

Screw the screw plug together with a new copper seal ring into the manifold-pressure compensator housing, but do not tighten.

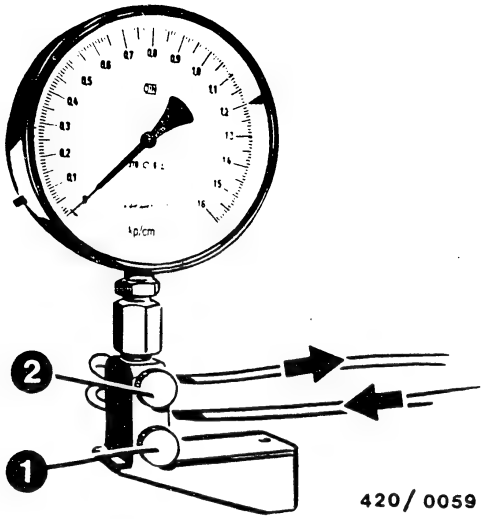
Take the complete manifold-pressure compensator from the assembly plate KDEP 1528 and mount on the respective governor.



12.5 Mounting the LDA

Requirement: the full-load delivery with charge-air pressure is adjusted at the full-load stop.

Before mounting the manifold-pressure compensator on the governor, clean the sealing surfaces of the governor housing and LDA housing and check for damage. Position a gasket on the governor housing and position the complete LDA. Apply Loctite sealing compound to the fastening screws before inserting them into the bores provided.
Screw in the fastening screws and tighten to 4...6 Nm.



Adjusting screw 1 (below) for adjusting the pressure.

Screw plug 2 (above) for testing the diaphragm chamber for leaks.

Make connection from pressure regulator to bottom connection of the adjusting throttle.
Connect the LDA to the top connection of the adjusting throttle.

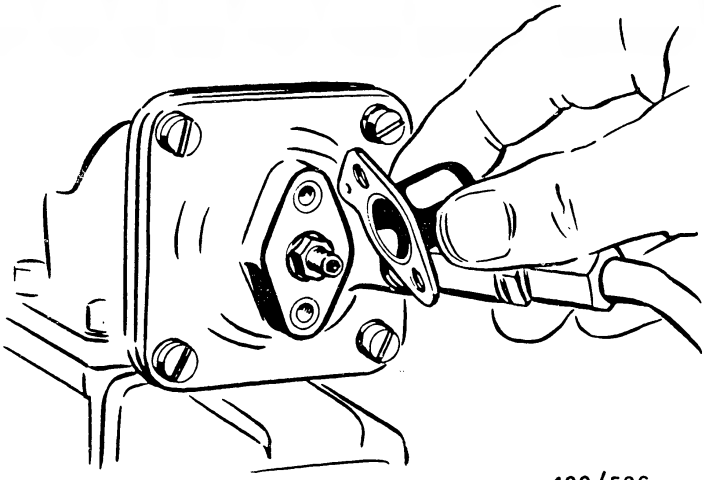
12.6 LDA adjustment

Set the max. specified pressure at the pressure regulator.
Adjust the speed in accordance with the test-specification sheet "Full-load stop" section; control lever to "Full".

Testing with
falling pressure = Decrease in control-rod travel

Testing with
rising pressure = Increase in control-rod travel

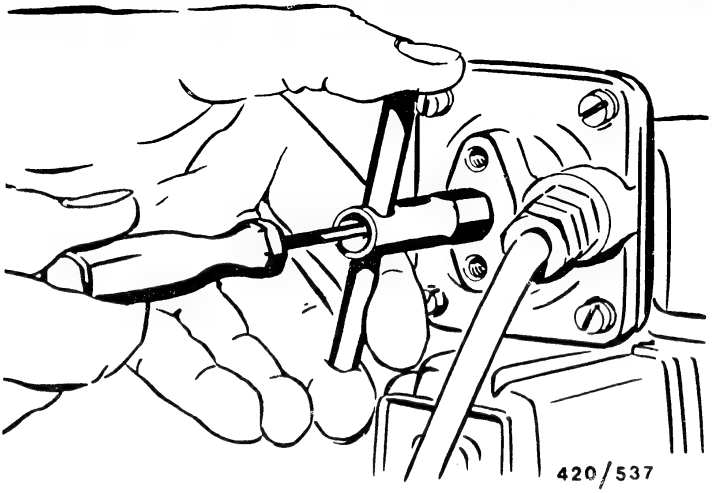
Adjust speed and charge-air pressure of the adjusting point in accordance with the test-specification sheet "FULL-LOAD STOP" section.



420/536

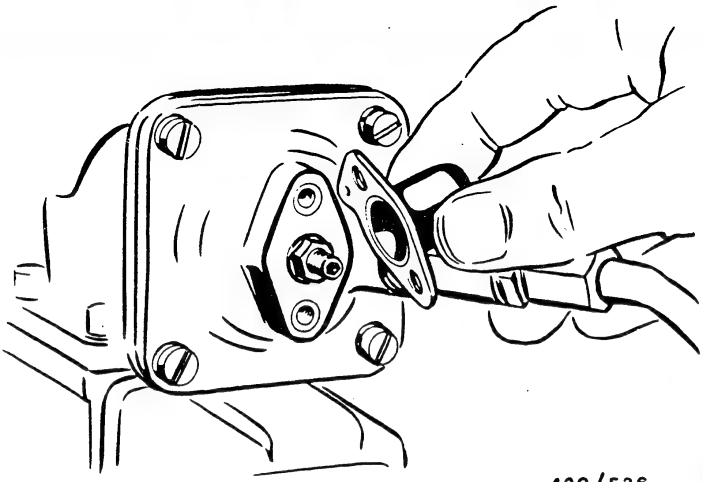
12.7 Adjustment of suction control-rod travel and suction quantity

Loosen the fastening screws of the protective cap and unscrew. Remove the protective cap.



Run the pump at specified speed in accordance with the test-specification sheet "Full-load stop" section. Set charge-air pressure to 0 hPa. Using socket wrench KDEP 1048, set the appropriate control-rod travel.

Look for the test specifications (speed and fuel delivery) for 0 hPa in the "Fuel-delivery characteristics" section, and measure the fuel delivery.
If the fuel delivery measured does not agree with the fuel delivery specified, this may be corrected at the adjusting screw. (The adjustment of the appropriate control-rod travel carried out at first is meant as pre-adjustment).



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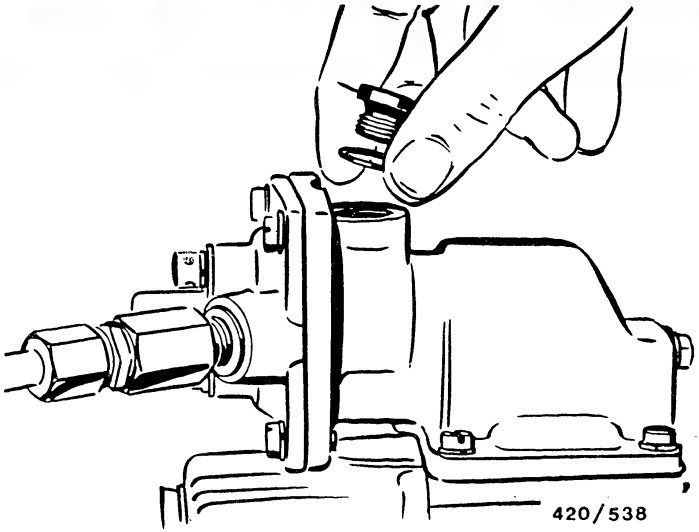
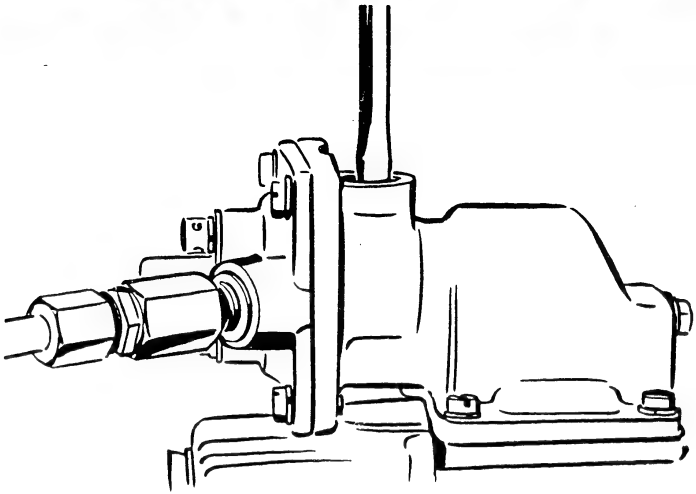
After obtaining the specified delivery, tighten the lock nut of the adjusting screw and position the closure cap. Screw in the fastening screws and tighten to 5...7 Nm.



Loosen the top screw plug and unscrew. Check whether the tension on the LDA spring is completely relieved.



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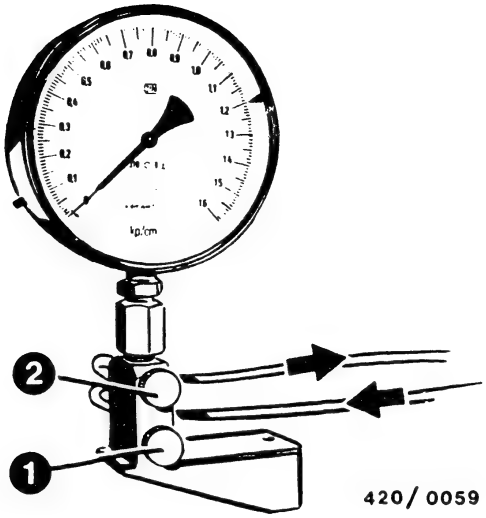
12.8 Adjusting the LDA spring

Increase the LDA pressure until the second specified value given in the test-specification sheet "FULL-LOAD STOP" Measurement section, is obtained. Measure the control-rod travel.
If the specified control-rod travel is not obtained, change the initial tension of the spring by turning the adjusting sleeve until the control-rod travel is correct.

Measurement

Change the pressure at the adjusting throttle until the specified control-rod travel change is obtained. If the pressure read off is not within the tolerance, the LDA spring must be replaced.

Screw in the screw plug again and tighten to 30...35 Nm.



12.9 Testing for leaks

Set 1.0 bar charge-air pressure. Close screw plug (2) on the adjusting throttle and shut off the air supply: The pressure gauge must not show a pressure drop greater than 0.03 bar within 10 sec.!

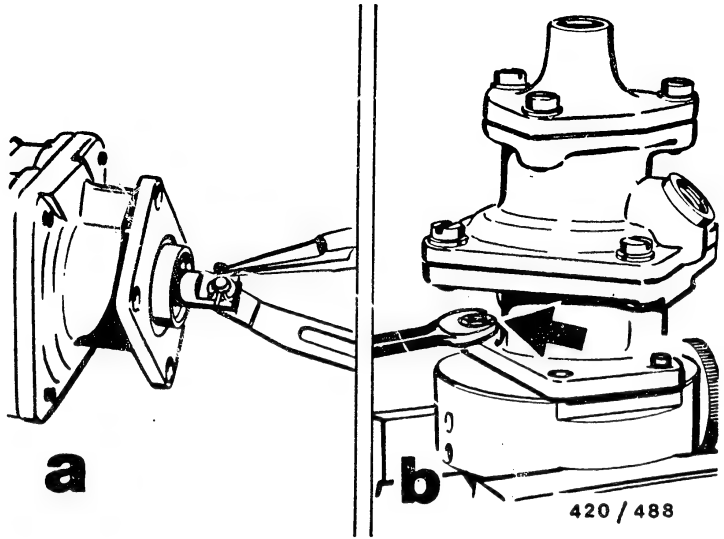
13. SECURING AND SEALING

Tighten screws and nuts to the prescribed tightening torque.

Secure stop screws with varnish or wire and seal them. (Where the safety locks on arrival of the compensator can be identified, put corresponding safety locks back on.

Put on the repair stamp and stamp in the workshop identification.

M. B.:
The repair stamp and the workshop identification must be taken off and replaced every time the full-load fuel delivery and/or rotational speed are (later) changed!



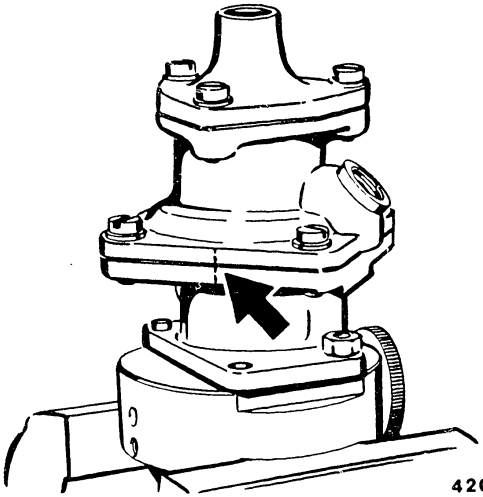
14. TWO-STAGE LDA

14.1 Disassembly

Remove the strap from the stroke rod of the LDA (illustration a).

Clamp the assembly device KDEP 1544 in the vise. The arrangement of the guide pin and threaded pin for locating the LDA is determined by the pattern of the holes in the mounting flange of the LDA housing.

Position the LDA on to the corresponding locating surface of the assembly device KDEP 1544 and secure with a nut (arrow, illustration b).



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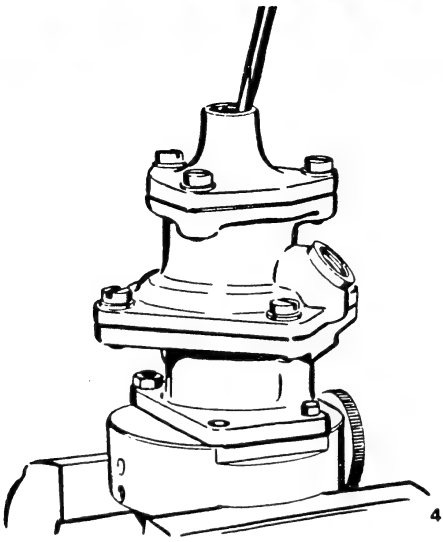
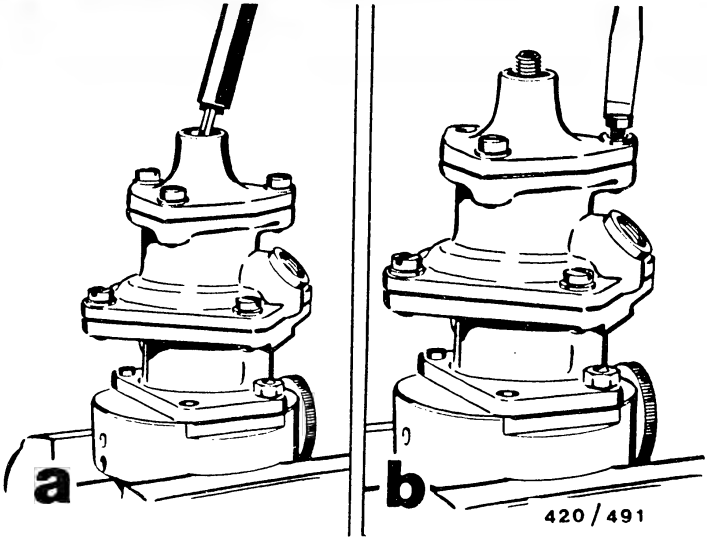
Using a marking needle, mark the position of assembly on the manifold-pressure compensator cover and housing (arrow).

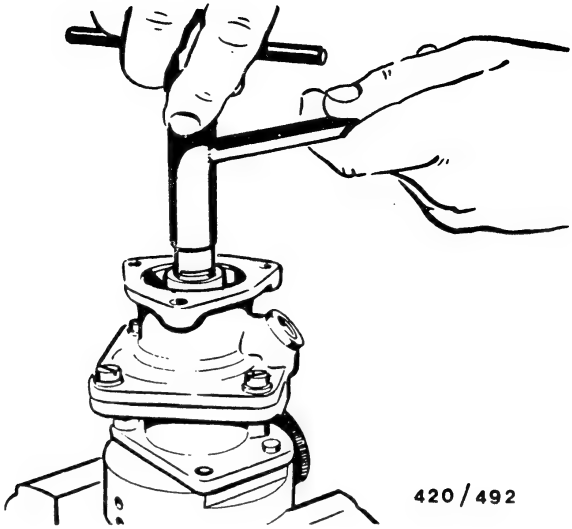


Remove the central plug from the LDA cover. This results in the destruction of the plug and the plug must be replaced by a new one when reassembling.

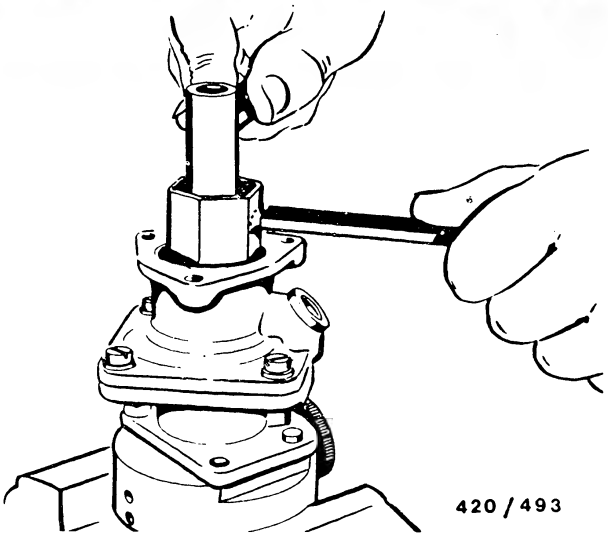


As far as required, loosen the slotted round nut of the suction-delivery adjusting screw using socket wrench KDEP 1578 and unscrew the adjusting screw from the cover (illustration a).

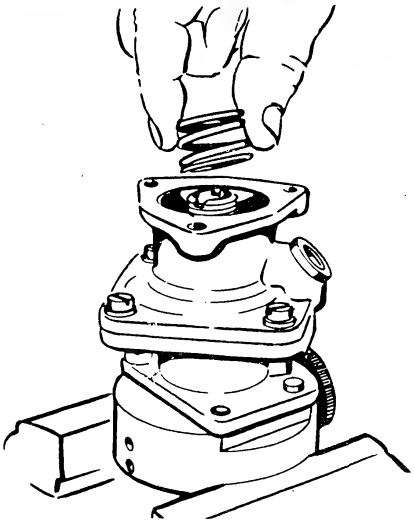
Loosen the LDA cover fastening screws and unscrew.
Remove the LDA cover (illustration b).
Remove the seal ring from the LDA cover.



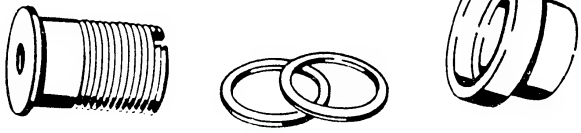
Loosen the fastening nut of the spring retainer using socket wrench KDEP 1578 and unscrew.



For dismounting the spring retainer, firstly loosen the hexagon nut of the spring retainer with the socket wrench KDEP 1578 and unscrew.



Remove the capsule spring and capsule sleeve from the stroke rod.



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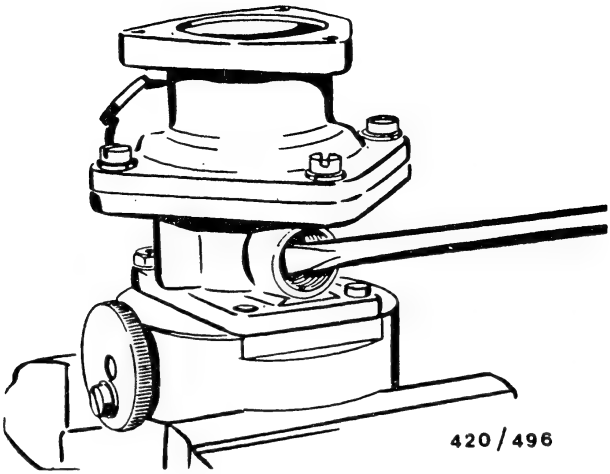
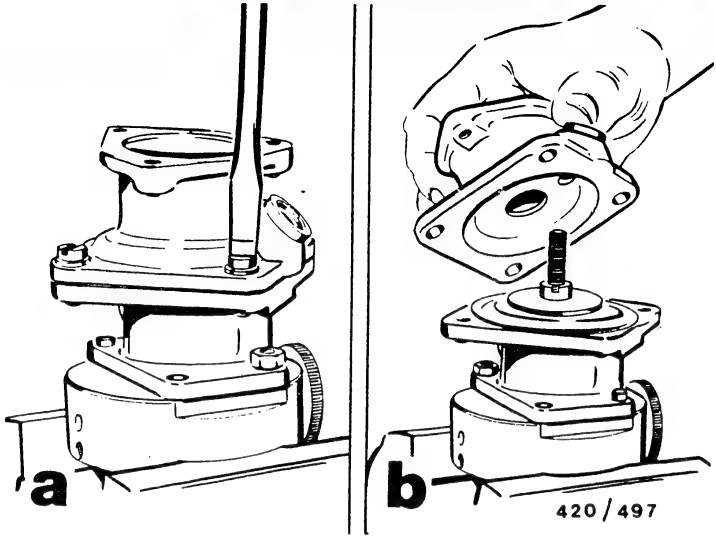
Remove the capsule housing and adjusting disks from the capsule sleeve.



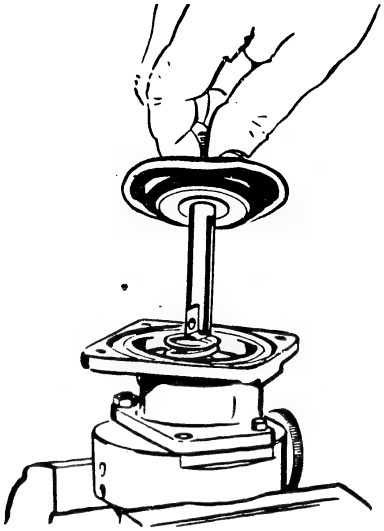
Loosen screw plug of the manifold-pressure compensator housing and unscrew.

Using a screwdriver, screw the guide bushing in the manifold-pressure compensator fully down into the manifold-pressure compensator housing. In this way, the tension on the helical compression spring in the manifold-compensator is relieved as far as possible.



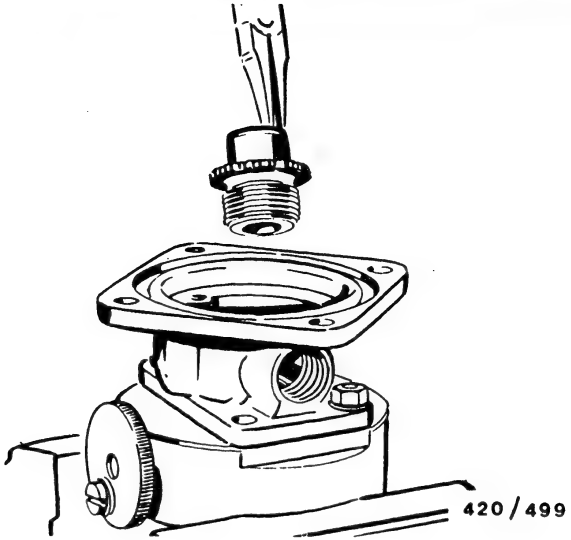
Loosen the fastening screws of the LDA intermediate housing and unscrew (illustration a).

Remove the intermediate housing (illustration b).

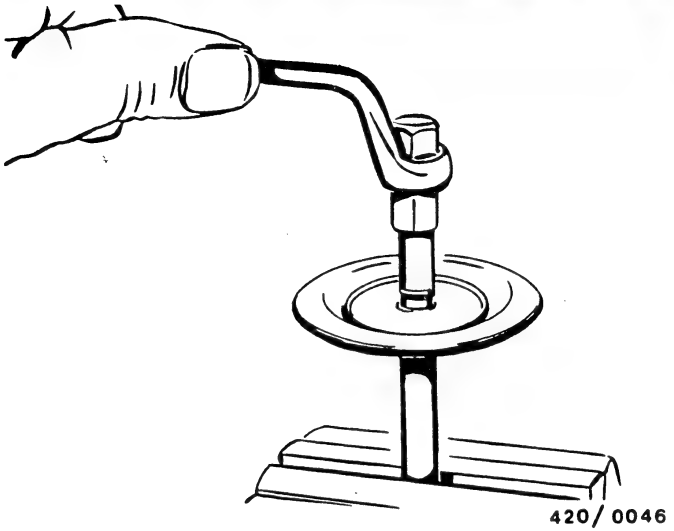


420/498

Take the diaphragm assembly, consisting of the diaphragm, spring seats, slotted round nut, and spring washer, out of the manifold-pressure compensator housing and lay it to one side.



Take the pressure spring out of the manifold-pressure compensator housing and lay it to one side. Unscrew the guide bushing from the manifold-pressure compensator housing. No further disassembly of the manifold-pressure compensator housing is possible. The spring clip to secure the guide nut is riveted into the manifold-pressure compensator housing and for that reason cannot be replaced with a new spring.



Clamp the diaphragm assembly in the vise on the flat surfaces of the lifting rod.

Release the slotted round nut using socket wrench KDEP 1620, and unscrew it from the lifting rod. Take the spring washer, the spring seats, and the diaphragm from the lifting rod.

Unclamp the lifting rod.

14.2 Cleaning of the parts

Wash out the parts in a non-combustible commercially-available cleaning agent.

Then blow them out with compressed air.

Follow the following safety regulations:

Regulations for Work with Combustible Fluids (Vbf) from the Federal Ministry of Labor (BmA).

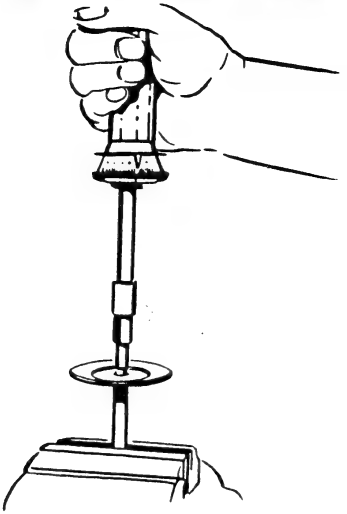
Safety Regulations for Handling of Chlorinated Hydrocarbons, for the plant: ZH1/222
for the employee: ZH1/119

from the Hauptverband der Gewerblichen Berufsgenossenschaften /Zentralverband für Unfallschutz und Arbeitsmedizin), Langwartweg 3, 5300 Bonn 5. (Central Association for Accident Prevention and Industrial Medicine).

In other countries, follow the corresponding regulations from the country in question.

14.3 Examination of the parts

After they are taken out, all parts are examined to see if there are defects that would prevent their being reused. In particular, check whether the diaphragm has cracks, porous spots, or fatigue breaks.
For the sake of safety, it is recommended that the diaphragm be replaced every time a repair is made. The O-ring for sealing the stop must be taken out and replaced in every case.



420/0047

14.4 Assembly

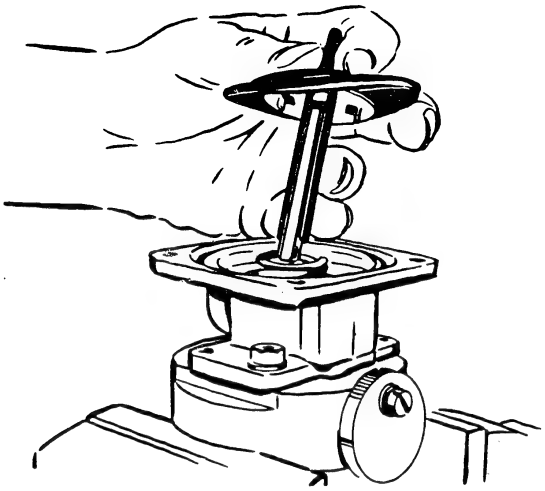
Clamp the lifting rod into the vise on the two machined surfaces.
First one seat disc is put on the lifting rod, then the diaphragm, and then the second seat disc. The diaphragm is put in in such a way that its shoulder is turned away from the thread on the lifting rod. Then the slotted round nut is screwed onto the thread and tightened using socket wrench KDEP 1620 and a torque screwdriver to the prescribed tightening torque of 3.5...4.0 Nm.

420/0048

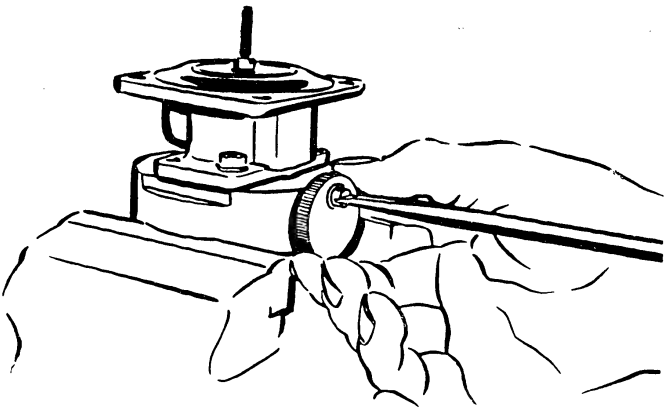
Set the manifold-pressure compensator housing on assembly device KDEP 1544 and fasten it with a hex nut.

Using a screwdriver, screw the guide busihing all the way down into the manifold-pressure compensator housing.

Set the pressure spring on the collar of the guide bushing.

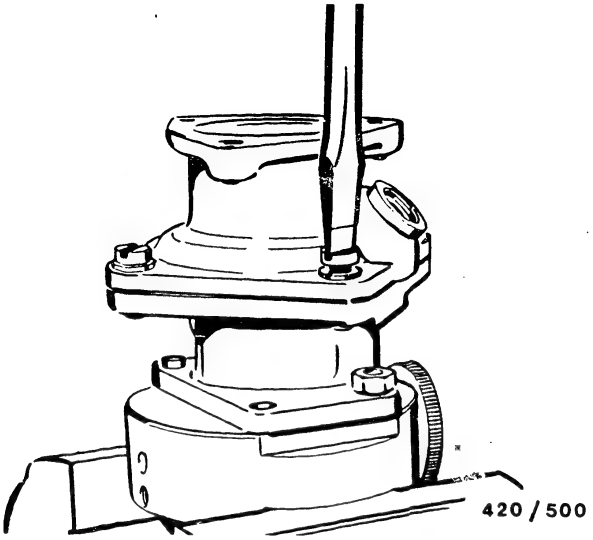


The pre-assembled diaphragm assembly is now put into the manifold-pressure compensator housing in such a way that the slot of the lifting rod is fixed in its installation position by the guide pin on assembly tool KDEP 1544.

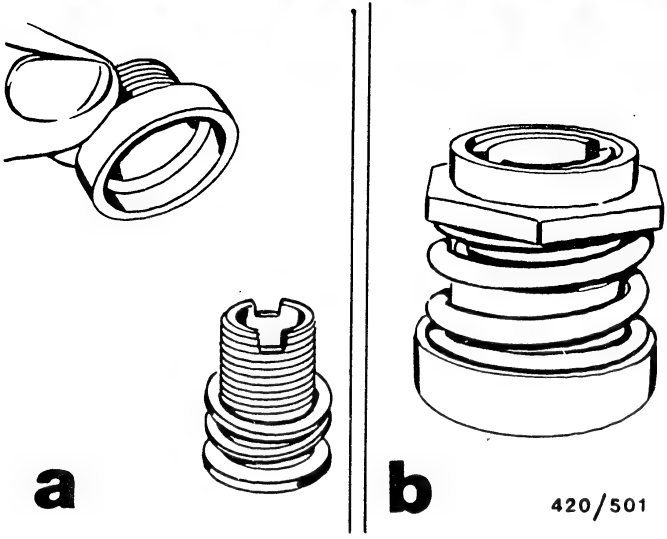


420/0050

Turn the knurled handwheel on the fixing pin to the stop and tighten the fillister head screw.
That guarantees that the position of the slot on the lifting rod is correctly aligned with the position of the fastening holes in the manifold-pressure compensator housing flange. This is extraordinarily important because only in this way is a scraping of the lifting rod on the guide pin in the governor cover avoided.

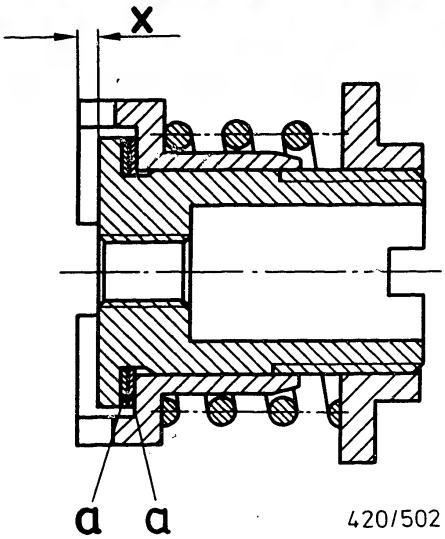


Position the LDA intermediate housing on to the LDA housing. Pay attention to the markings made beforehand. Screw the fastening screws into the LDA housing and tighten to 5...7 Nm.



Mounting the spring retainer

Position the shims (taken from service-parts list) on to the threaded bushing (illustration a), push on the guide bushing, position the spring and screw the threaded ring on to the threaded bushing so that it makes contact with the spring.
The turned shoulder of the threaded ring points away from the spring (illustration b).



a = Shims
x = Dimension of Stage 2

Using a caliper-type depth gauge, measure the dimension "x" of Stage 2 and compare with the value to be calculated from the test specifications.
The specified value for Stage 2 must be determined in the following manner:

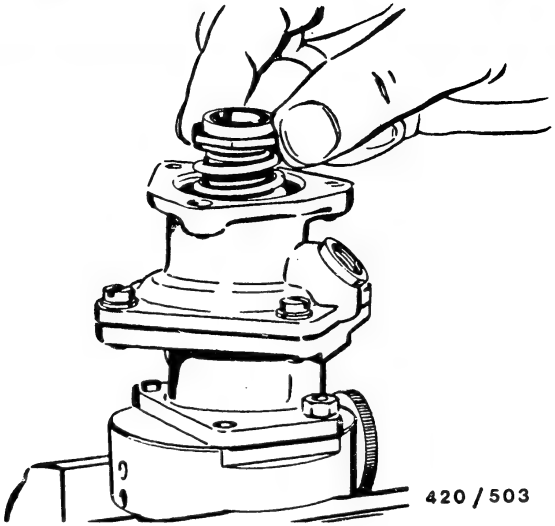
1. Look in the test specifications in the "Full-load stop" section and find the control-rod travel which corresponds to the highest charge-air pressure.
2. Subtract the control-rod travel from the "Adjustment" test section from this "full-load stop" control-rod travel, and the remainder gives the value of Stage 2.

Example:

Control-rod travel at highest charge-air pressure from test specs.	= 14.0 mm
Control-rod travel for "Adjustment" from test specs.	= 13.3 mm
Difference (remainder) = Stage 2	= 0.7 mm

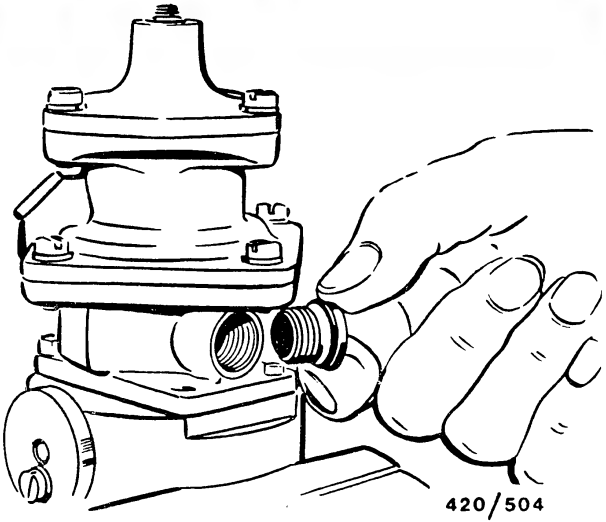
If the value calculated in this way differs from the value measured with the caliper-type depth gauge, the LDA capsule must be dismantled and the correct dimension "x" of Stage 2 must be adjusted by selection of the appropriate shims (a) in accordance with the service-parts list.

Reassemble the capsule as specified.



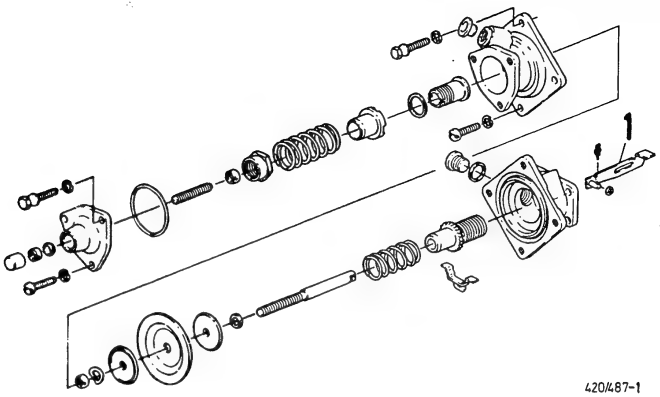
Screw the spring retainer on to the thread of the stroke rod as fas as it will go. Screw the slotted round nut on to the thread of the stroke rod and tighten slightly.
The capsule is adjusted precisely on the injection-pump test bench.

Insert the new seal ring into the ring groove in the LDA cover provided for this purpose. Position the LDA cover on to the intermediate housing and tighten with the appropriate screws to a tightening torque of 5...7 Nm.



Screw the screw plug together with a new copper seal ring into the manifold-pressure compensator housing, but do not tighten.

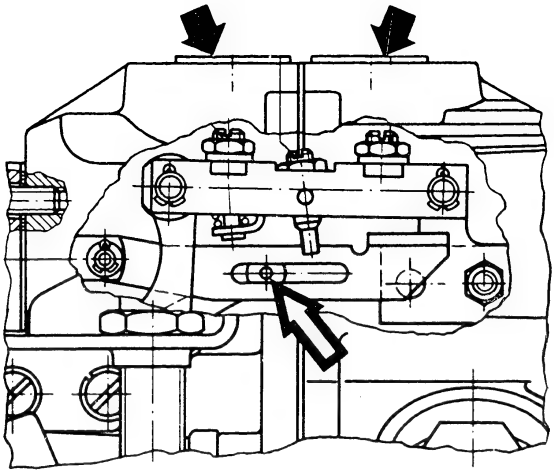
Take the complete manifold-pressure compensator from the assembly plate KDEP 1544 and mount on the respective governor.



1 = Bracket

14.5 Taking off

Remove housing screws and nuts on the flange. Turn the flange lightly to the right and unhang the bracket from the guide pin on the rocker-arm. Take off the manifold-pressure compensator.



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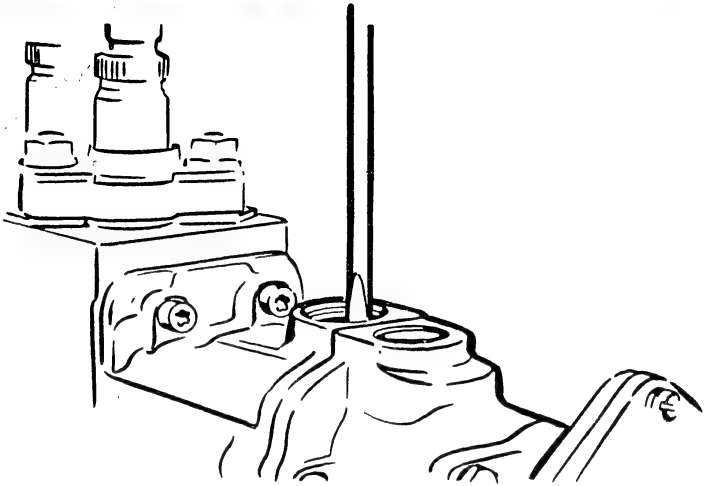
14.6 Putting on the manif.-pressure compensator

Screw the screw plugs (top arrows) out. Control lever at stop. Insert the manifold-pressure compensator with the bracket turned 90° to the left into the top opening on the governor cover. Go past the control lever and hang it on the rocker-arm guide pin (arrow).

The correct installation of the bracket can be checked through the top adjustment openings in the governor housing or cover and via the hole in the spring chamber closure. Tighten the fastening screws and nuts to 5...7 Nm.



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14.7 Adjustment of switchover point (if there is one)

(Use box wrench KDEP 1547)
Check the "switchover point", blocking and unblocking of the automatic starting equipment. To do so, with increasing rotational speed (starting from n = 0 min^{-1}), move the control lever quickly from "stop" to "full speed".

Screwing the setting screw (1) further out produces a switchover point at a higher rotational speed.

If no switchover point has been indicated, use 50...100 min^{-1} less than the lower nominal rotational speed.

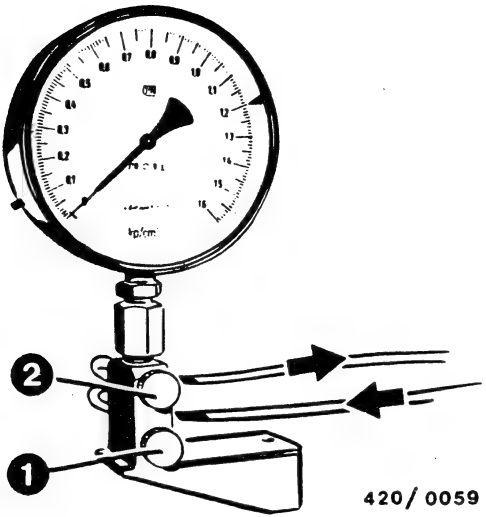
After each adjustment, secure the setting screw in place with a nut.

This switchover point must be checked very exactly:

There must be assurance that the assembly has been properly done. In particular. the bracket must be hung correctly on the guide pin of the rocker-arm.

With that, at a lower rotational speed, the starting control-rod travel and starting fuel delivery must be attained!

At a higher rotational speed, only the full load control-rod travel may be attained!



Setting screw 1 (bottom) for setting the pressure.
Screw plug 2 (top) for testing the diaphragm chamber for leaks.

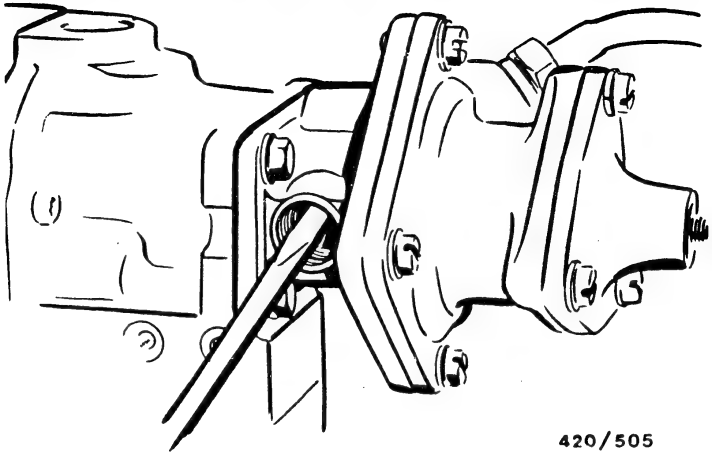
Connect the pressure regulator to the lower connection on the adjusting throttle.
Connect the manifold-pressure compensator to the upper connection on the adjusting throttle:

14.8 LDA-Adjustment

Set the max. prescribed pressure at the pressure regulator.
Rotational speed according to Test Sheet, Section "FULL-LOAD STOP".
Control lever at full speed.

Testing with
falling pressure = Decrease in control-rod travel

Testing with
rising pressure = Increase in control-rod travel



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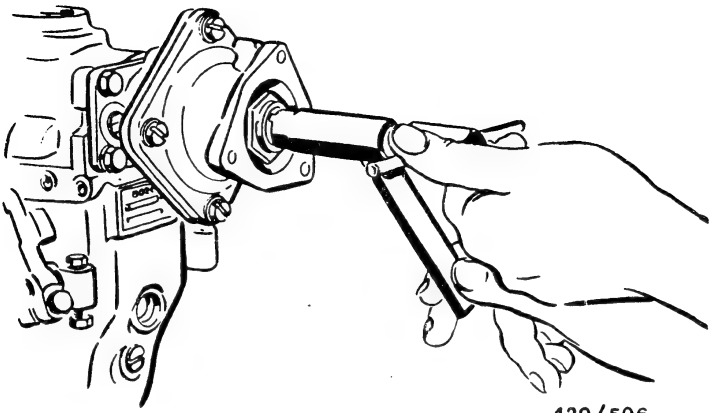
14.9 Full-load delivery with LDA

Unscrew the side screw plug from the LDA housing and using a screwdriver, screw the adjusting sleeve fully into the LDA housing in order to fully relieve the tension on the LDA spring.

The speed and fuel delivery stated in the test-specification sheet "FULL-LOAD DELIVERY AT FULL-LOAD STOP" section must be obtained in the 1000 stroke measurement specified. Pay particular attention to a dispersion of values permissible.



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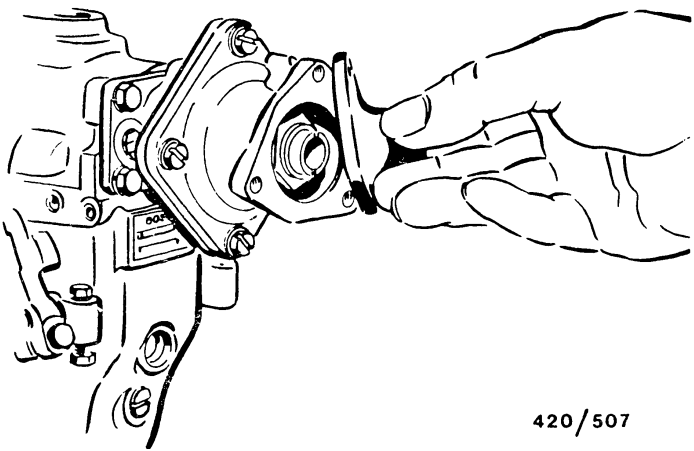
Run the injection-pump assembly at the speed specified in the test-specification sheet "FULL-LOAD DELIVERY AT FULL-LOAD STOP" section and apply the pressure stated to the LDA. Perform the 1000 stroke measurement and read off the full-load delivery. Switch off the test bench and shut off the charge-air pressure.
If the full-load delivery read off does not match up with the delivery specified, unscrew the fastening screws of the LDA cover and remove the LDA cover.
Adjust the full-load delivery by turning the complete LDA spring retainer using the socket-wrench set KDEP 1578 .
Remount the LDA cover and measure the full-load delivery.



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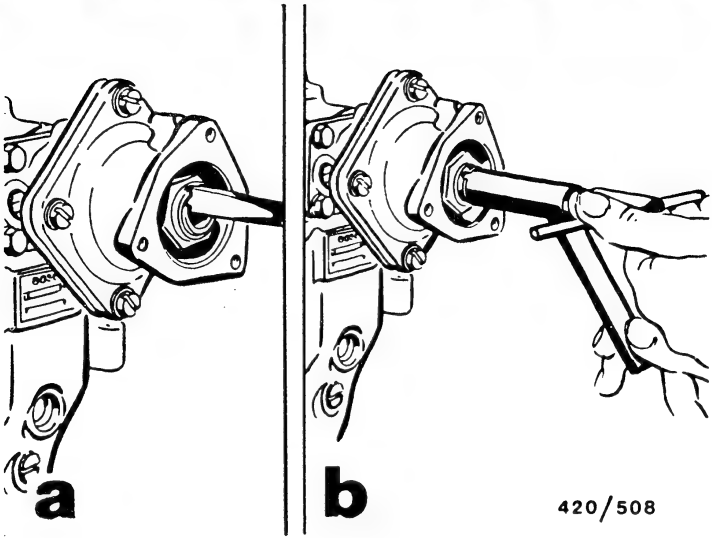
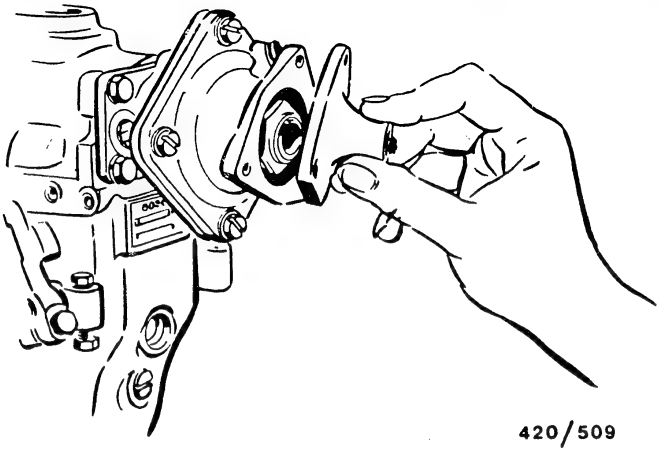
14.10 LDA adjustment

Loosen the fastening screws of the LDA cover. Unscrew the screws and remove the cover.



Switch on the test bench and run the pump at the speed of the LDA adjusting point. Push the LDA spring retainer manually using a suitable tool (e.g. screwdriver) as far as it will go (illustration a). This must result in the greatest control-rod travel given in the LDA test specifications.

If this is not the case, unscrew the slotted round nut and spring retainer using socket-wrench set KDEP 1578. Dismantle the spring retainer and install different shims in accordance with the service-parts list. Reassemble the spring retainer and screw it into the LDA.



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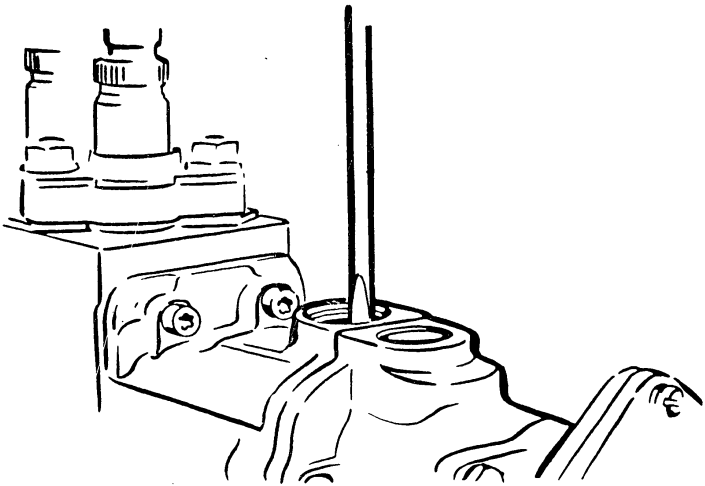
Mount the LDA cover.
Tighten the fastening screws to the specified tightening torque of 5.0...7.0 Nm.



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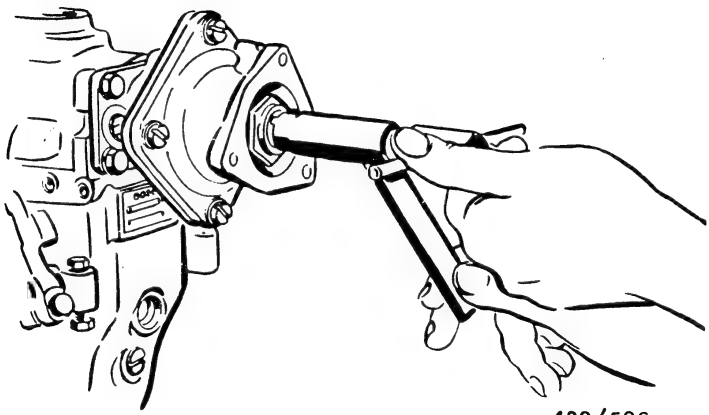
With RQV governors with internal torque-control mechanism, loosen the screw plug in the governor housing and unscrew.

By turning the adjusting screw in the torque-control strap, fully relieve the tension on the torque-control spring.
Screw the screw plug in again.



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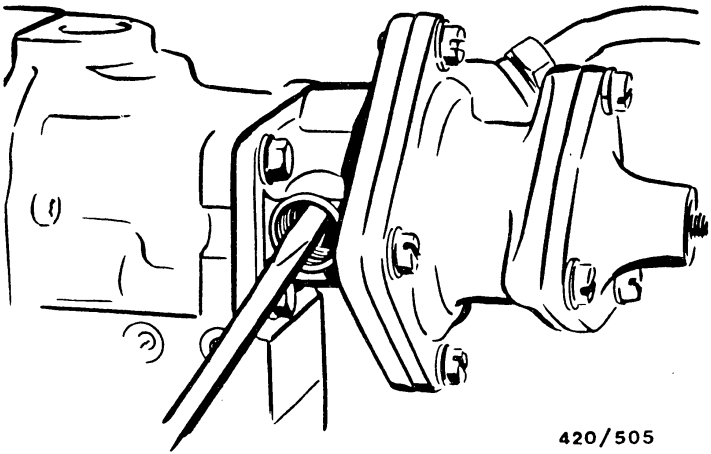
Run the pump at the specified speed (test-specification sheet "FULL-LOAD STOP" section, adjustment). In this way, the specified control-rod travel must be obtained.
If this is not the case, correct this by turning the LDA capsule.



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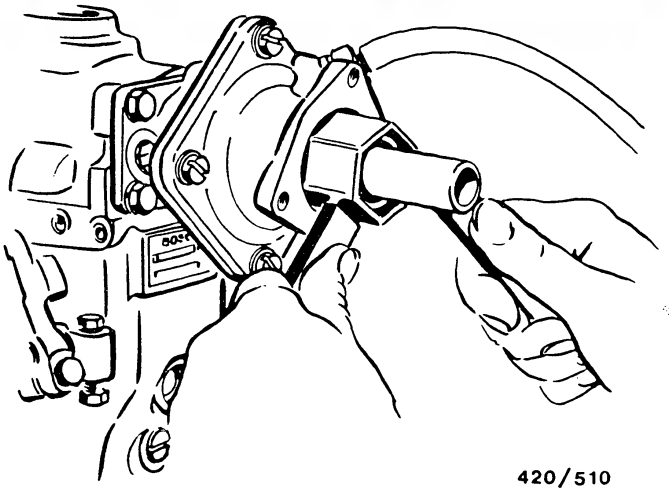
At the same pump speed, alter the charge-air pressure until the first value of the "measurement" is obtained.

Unscrew the side screw plug and change the initial tension on a LDA spring by turning the adjusting sleeve in the LDA housing until the appropriate control-rod travel is obtained.

Change the charge-air pressure to the next value given in the test-specification sheet and measure the control-rod travel.
If the control-rod travel is not correct, the fault lies with the LDA spring. This spring must then be replaced by a new one.



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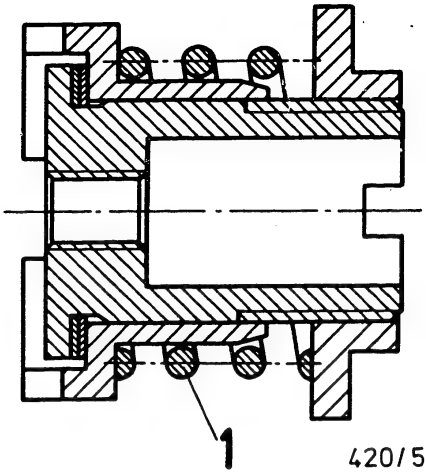
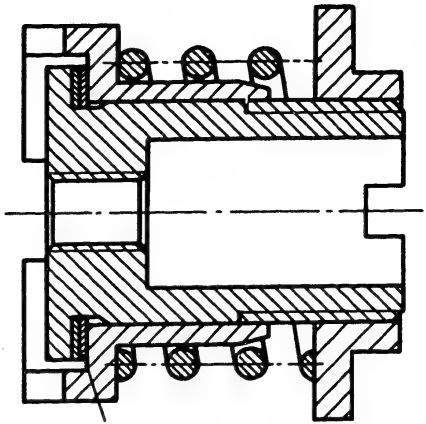
For adjusting the second stage, adjust the charge-air pressure to the next pressure value specified (higher than under point "Adjustment").
Read off the control-rod travel. If the control-rod travel is not correct, unscrew the LDA cover and turn the adjusting nut of the LDA capsule using socket-wrench set KDEP 1578 in order to change the preload force of the spring.
Relieving the load on the spring results in greater control-rod travel. Screw down the LDA cover again.



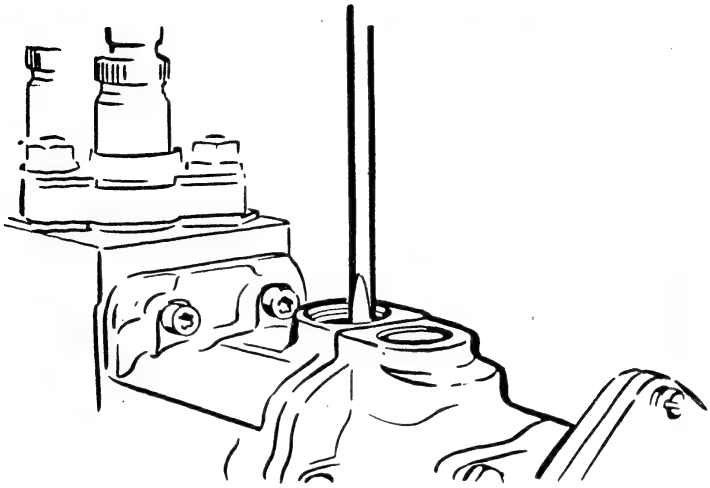
Set the next highest charge-air pressure.
If the appropriate control-rod travel is not obtained, the spring (1) of the LDA capsule must be exchanged for a new one.

For checking the overall LDA adjustment, the charge-air pressure of the LDA adjusting point is adjusted once again and the control-rod travel is measured.
If the specified control-rod travel is not obtained, repeat the whole adjustment procedure.



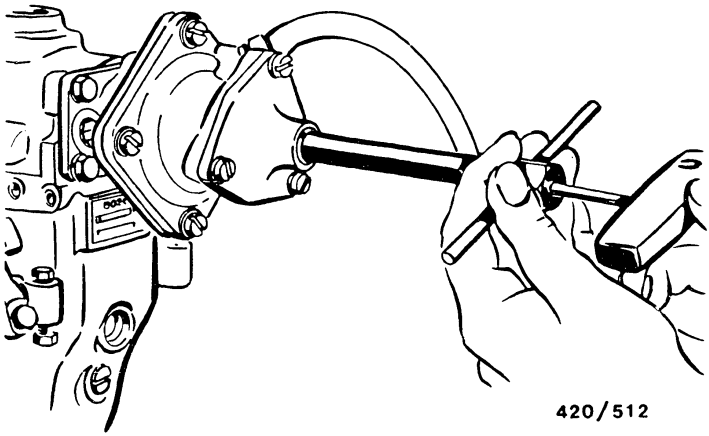
Set the maximum charge-air pressure and measure the control-rod travel. This control-rod travel corresponds to the travel obtained on pushing the capsule manually.

The control-rod travel is corrected by selecting the appropriate shims (1) in accordance with the service-parts list.



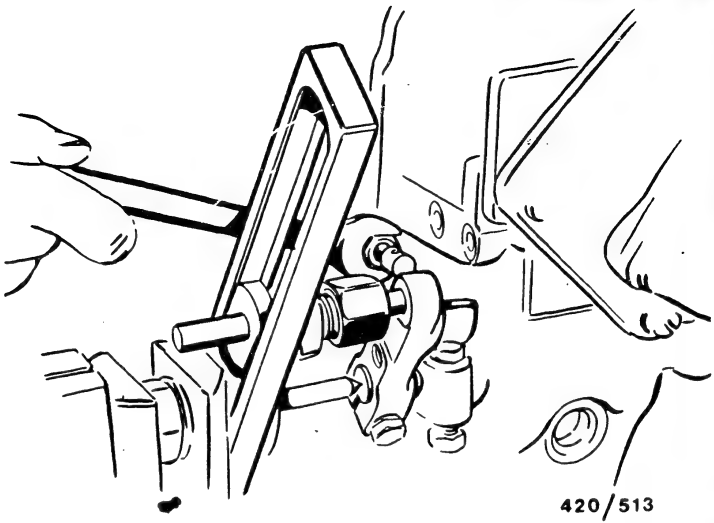
15.11 Torque control in the RQV governor with two-stage LDA

Unscrew the screw plug of the governor housing and adjust the torque control of the strap until the values of the "Torque control" section are obtained.



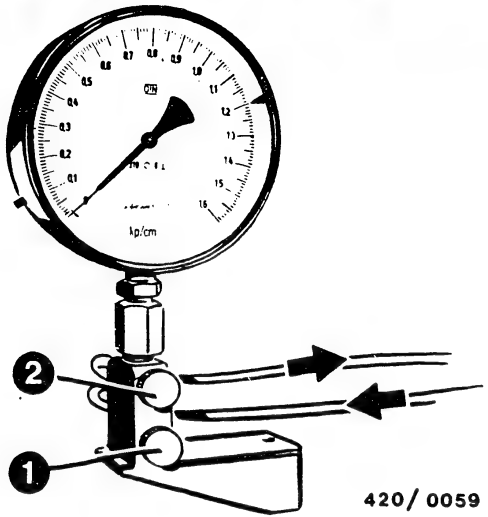
15.12 Adjusting the suction control-rod travel

Set the charge-air pressure to 0 bar and measure the corresponding control-rod travel.
If the control-rod travel specified in the test specifications is not obtained, loosen the lock nut in the LDA cover and turn the adjusting screw using the socket-wrench set KDEP 1578 until the specified control-rod travel is obtained.



Run the pump with the highest speed given in the "Fuel-delivery characteristics" section, set the corresponding charge-air pressure and measure the fuel delivery. Adjustment with RQ governor is performed via the stop screw of the governor control lever.

With the RQV governor, the shims in the LDA spring retainer must be exchanged if necessary.



15.13 Testing for leaks

Seal all openings on the manifold-pressure compensator. Set 1.0 bar charge-air pressure. Close screw plug 2 on the adjusting throttle and shut off the air. The pressure gauge must not indicate a pressure drop greater than 0.03 bar within 10 sec.

15.14 Adjusting the fuel-delivery characteristics

Set all of the values in the test-specification sheet with the control lever fully deflected, and test at the specified speeds and pressures.

If the specified values are not obtained, the torque-control mechanism, if fitted, must be put into proper working order. In the case of governors without torque-control mechanism, check the LDA adjustment and correct if necessary.

After-sales Service

Technical Bulletin

Introduction of adjustable link fork for start locking

for mechanical governors RQ (V) . . AB . .
and RQ (V) . . PA . .
with automatic starting fuel delivery

42
VDT-I-420/102 B
12. 1976

On the above-mentioned mechanical governors an adjustable link fork has been incorporated for some time (fig. 2). This governor unit is identifiable by the screw plug on top of the governor housing (item 4, fig. 2).

By using the adjustable link fork, the four stop straps with varying dimensions previously used are no longer necessary (item 1, fig. 1).

The new stop strap is now combined with the full-load stop to form one unit. Adjustment of the unlocking speed is made by means of the adjusting screw, accessible through a hole, M 22 x 1.5, in the governor housing (item 6, fig. 2). This hole is sealed by means of screw plug 1 423 462 099 (item 4).

To avoid damage to the adjusting screw (item 6, fig. 2) it was necessary to recess the governor housing and governor cover (fig. 2). This necessitates a new seal between governor housing and governor cover (item 5, fig. 2). The new seal can also be used with the old gove nor housing, but the old seals cannot be used with the new housings. Old link forks and stop straps can be used with new governor housings and covers, but new link forks and stop straps cannot be installed in old governor housings and covers.

With size "P" governors, the strap attached by screws to the control rod (item 7, fig. 3) has also been changed. This new strap can however only be used in conjunction with the adjustable link fork.
Old link forks, stop straps and straps can still be used for service part purposes and will continue to be available.

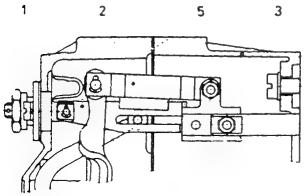


Fig. 1 Old model

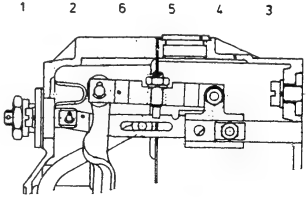


Fig. 2 New model

1 Stop
2 Link fork
3 Housing
4 Screw plug
5 Seal
6 Adjusting screw

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

List of service parts

	RQ(V)..AB..	RQ(V)..PA..
Link fork, old (item 2, fig. 1)	1 421 933 126	1 421 933 097
Link fork, new (item 2, fig. 2)	1 421 933 132	1 421 933 132
Stop strap, old (item 1, fig. 1)	1 421 335 021 023 025 027	1 421 335 021 023 025 027
Stop strap, new (item 1, fig. 2)	1 421 335 029 (taken from full-load stop service-parts list)	1 421 335 029 (taken from full-load stop service-parts list)
Seal, old (item 5, fig. 1)	1 421 015 046 061	1 421 015 046 061
Seal, new (item 5, fig. 2)	1 421 015 057	1 421 015 057
Strap, old		2 422 305 001 2 422 315 000
Strap, new (item 7, fig. 3)		2 422 305 022 2 422 305 024

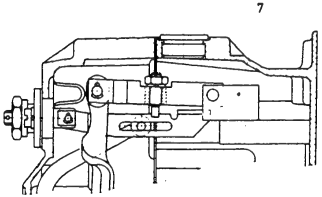


Fig. 3
7 Strap

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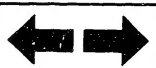

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